The relationship between housing tenure and health: does ontological security play a role?

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Abstract

Previous research in the UK and elsewhere has found that housing tenure (i.e. whether the dwelling is owned or rented) predicts mortality and morbidity. This thesis aims to explain whether ontological security (a long term tendency to believe things are reliable and secure as opposed to threatening) is more likely to be associated with owner occupation, and therefore whether it helps to explain the observed association with tenure and health.

For the purposes of this study ontological security was operationalised as being formed of three components: protection, autonomy and prestige. A scale was devised to measure ontological security arising from the home through these three components. This scale was included in a postal survey that also included questions on health, housing, area, psychological and sociodemographic characteristics. The postal survey was sent to a random sample of adults in the West of Scotland and nearly 3000 completed questionnaires were returned.

I found that ontological security was associated with owner occupation but not independently of features of housing. Ontological security was not independently related to housing tenure itself. Owner occupiers reported more ontological security from their homes because their homes were in better condition, situated in better areas and of higher value than social renters. Ontological security appeared to be related to health particularly through psychological characteristics. Other reasons for the associations between tenure and health were that owners were on average younger and richer than social renters.

This study suggests that social meaning per se may not be health damaging, but that social rented homes might put their occupants at greater health risk because they are in poorer condition, located in more poorly resourced and problem ridden areas and of lower status. These features of social renting may also be observed in other countries (e.g. USA).

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Chapter 1 Introduction

From 1997 to 2000 I was working as a research assistant on a project exploring why homeowners and car owners are healthier than renters and non car owners respectively. The study was funded under the ESRC Health Variations Programme (grant number L128251017). The grant holders were Sally Macintyre, Anne Ellaway and Ade Kearns. The project was based at the MRC Medical Sociology Unit which became the MRC Social and Public Health Sciences Unit during the lifetime of the project. The research involved a postal survey of a random sample of 3000 adults in the West of Scotland and qualitative interviews with a quota sample of 40 people who had completed postal questionnaires. For my thesis I have concentrated on the housing side of the postal survey. The project itself was already funded when I arrived. My contribution to the study was introducing the hypothesis that ontological security might be one of the links between housing tenure and health. This hypothesis is the focus of this thesis.

In this introductory chapter I define the terms 'ontological security' and 'housing tenure' and I describe the distribution of housing tenures in the UK. I then describe the contents of each chapter of the thesis.

1.1 Definitions of terms

Ontological security

The word 'secure', according to the Concise Oxford Dictionary, means "untroubled by danger or apprehension... reliable, certain not to fail or give way" (Sykes 1976:1026-7) and 'security' is "confidence; thing that guards or guarantees" (Sykes 1976:1027). 'Ontological' refers to the "branch of metaphysics dealing with the nature of being" (Sykes 1976:766). Therefore ontological security is the way that feeling confident and untroubled influences the very centre of one's essence. This term will be further discussed and elaborated upon in chapter 3.

Housing tenure

Tenure, according to the same dictionary, is a "condition, form of right or title, under which (especially real) property is held" (Sykes 1976:1193). There are various ways in which property can be held in the UK. Owners can either have paid for their dwelling previously or have inherited it (outright ownership) or be paying for it in stages, customarily through a mortgage. Owner occupiers actually live in their dwelling whereas an owner may live elsewhere. In this thesis when I use the term 'owners' I am referring to 'owner occupiers' rather than owners who live elsewhere. This abbreviation is commonly used.

Other people rent their homes from a landlord; in this case the person pays to use the dwelling. A person who rents their home is known as a renter or tenant. If the organisation that is providing the housing is not run to obtain a profit then the relationship is called public or social renting (Harriot and Matthews 1998). Public renting is "usually defined as accommodations owned and managed by public-that is governmental- bodies" (Best 1996:536) and thus refers to housing rented from the local authority or council. Social renting includes "other accommodations subsidized by public sources" (Best 1996:537), such as housing associations, as well as public renting. Housing associations are organisations set up specifically to provide housing; there are also housing co-operatives where tenants themselves run the organisation. In Scotland the largest social housing provider, aside from local councils, is the National Housing Agency: Scottish Homes. Social landlords are generally subsidised with public money.

Private renters' landlords are not subsidised. Private landlords may only be renting out one property (for example a landlord who has had to move to a different area may have been unable to sell the house and so rents it out instead). In other cases private landlords may own a large number of properties. Today the division between private and social renting is blurring: housing associations are being encouraged to obtain funding from private companies as well as the government. Additionally there has been a shift from 'bricks and mortar' subsidies (where the government provides low rent housing) to 'personal subsidies' (where the government pays the rent of low income individuals). This has meant two things: firstly rents in the social rented sector are rising and they are now approaching the level of private rents in

some areas; secondly people who cannot afford social or private rents receive housing benefit (Best 1996). It is also possible to obtain housing through a job, for example clergy tend to be housed by the church; this can sometimes be termed 'tied housing' (Sykes 1976).

The distribution of housing tenures

Housing tenure has been included in the UK population census since 1961. The question asked in the 1991 census of England and Scotland is provided in Box 1.1. I refer to the English census because that is the form that the majority of the UK population will have received. I also refer to the Scottish census because the study discussed in this thesis took place in Scotland. The differences between the two forms are minor (see notes below the box).

Table 1.1 shows the proportions in each tenure category in the 1991 UK census. The majority (two thirds) were owner occupiers, about a quarter were public renters and less than a tenth rented privately. In Britain it appears that the majority tenure is home ownership and the main alternative is renting from a non profit making agency particularly local authorities. Since 1991 home ownership has grown with social rented properties being bought by tenants through the Right to Buy scheme[1] (Wilcox 1999).

Table 1.1 Tenure breakdown in the UK in the 1991 census

	N	%
Owned outright	5178975	23.8
Buying	9279453	42.6
Owner occupation total		**66.4**
Local authority or new town	4629103	21.2
Housing association	685211	3.1
Scottish Homes	60474	0.3
Social renting total		**24.6**
Private renting	1550062	7.1
Rent with job	419509	1.9
Total households	21802788	

Source:(ONS 1991b)

[1] The Right to Buy scheme allows council tenants to purchase their homes below the market price. The scheme was established through the Housing Act in 1980.

Box 1.1 The tenure question as asked in the 1991 census

H3 Tenure

Please tick the box which best describes how you and your household occupy your accommodation.

If buying by stages from a Council, Housing Association or New Town or Scottish Homes[1] (under shared ownership, co-ownership or equity sharing scheme), answer as owner occupier at box 1.

If your accommodation is occupied by lease originally granted for, or extended to, more than 20[2] years answer as an owner-occupier. For shorter leases answer 'By renting'.

A private landlord may be a person or a company or another organisation not mentioned at 3, 4, 5, 0 or 6 above.

As an owner occupier:

-buying the property through mortgage or loan 1

-owning the property outright (no loan) 2

By renting, rent free or by lease:

-with a job, farm, shop or other business 3

-from a local authority (council) 4

-from a New Town Development Corporation (or Commission) or from a Housing Action Trust[3] 5

-from Scottish Homes 0

-from a housing association or charitable trust 6

-from a private landlord, furnished 7

-from a private landlord, unfurnished 8

In some other way:

-please give details below

Sources: (ONS 1991a; GRO 1991)

[1]English census form does not ask about Scottish Homes
[2]Scottish census form refers to 21 years
[3]Scottish census form does not include "(or Commission) or from a Housing Action Trust"

1.2 Plan of the thesis

I will now describe how the thesis is structured. Chapters 2 and 3 discuss the literature pertinent to the topic of the thesis. In chapter 2 I illustrate how the literature suggests that housing tenure may be associated with health. I describe how previous work has considered housing tenure to be related to health through the relationship between tenure and material resources and housing conditions.

I introduce the issue of ontological security in chapter 3. I discuss literature that suggests that ontological security can be linked to health and housing and may have three components: protection, autonomy and prestige. In the second part of this

chapter I examine the debate on whether ontological security may arise more from owner occupied than rented homes.

The data that I used to examine the relationship between housing and health were collected through a postal survey. The survey is the subject of chapter 4. I discuss the design of the study in general and the procedures followed, why particular questions were chosen and how the scale to measure ontological security from the home was developed.

The next three chapters cover the analysis of the data collected in the postal survey. In chapter 5 I provide information about the sample in general and the characteristics of owners and social renters. I also discuss why particular respondents and variables were included or excluded in later analysis.

The topic of chapter 6 is the scale devised to measure ontological security from the home. I describe how owners and social renters answered each item in the scale. Using factor analysis, I show how the scale can be divided into three factors corresponding to protection, autonomy and prestige. These factors are then contrasted with other psychological characteristics and health measures in bivariate analysis. I conducted bivariate analysis to find whether ontological security was likely to be part of the pathway between housing tenure and health. The final part of this chapter focuses on the relationship between the components of ontological security from home and housing tenure using multivariate analysis.

I turn to health as an outcome in chapter 7. Using multivariate analysis I determine which variables from the postal survey predict health. I then analyse which of these variables moderate the relationship between housing tenure and health. This chapter ends with some conclusions about multivariate analysis and the likely role of ontological security in the pathway between housing tenure and health.

In chapter 8 I relate my conclusions on the relationship between housing tenure and health to the wider literature and make recommendations for further work.

Now that I have described the organization of this thesis I turn to the literature on housing tenure and health.

Chapter 2 Housing tenure and health: the previous literature

The tenure of the dwelling a person lives in has been found to predict his or her longevity and his or her health. In this chapter I examine studies that have found a relationship between tenure and mortality and morbidity. I then discuss studies where the link appears to be more tenuous. At this point I turn to explanations for the relationship found in the literature: differences in the material circumstances and psychological characteristics of owners and renters; health being a determinant of tenure (the reverse causation hypothesis) and then in the second part of this chapter I consider features of housing as explanations for the observed health differences between owners and renters.

2.1 What is the link between tenure and mortality and morbidity?

In this section I describe studies that have linked tenure to death and health. Most of the studies took place in the UK but I have included studies from other countries where I have found them.

Observed links between tenure and mortality

Mortality rates can be measured through Standardised Mortality Rates, Standardised Mortality Ratios and Standardised Fatality Ratios. I explain differences between these as they occur in the text.

Filakti and Fox (1995) linked tenure and mortality using the Longitudinal Study (LS). The LS uses census information to link a one percent sample of the population of England and Wales between censuses from 1971. Sample members who die or emigrate are replaced by those who are born or who immigrate. Besides census data, there is also other linked information, such as mortality, made available from the National Health Service Central Register. The longitudinal nature of this study means characteristics or events at one time point can be used to predict an outcome at a later time point. Filakti and Fox linked tenure status in the 1971 and 1981

censuses to deaths up to 1981 and 1989 respectively. Table 2.1 shows Standardised Mortality Rates for each tenure; the rates refer to the number of people who had died in every 1000 in each group controlling for age and sex.

Table 2.1 Standardised Mortality Rates by tenure in the Longitudinal Survey

	Sample distribution		Standard Mortality Rates			
	1971	1981	1971-1981		1981-1989	
	%	%	Males	Females	Males	Females
Owner occupiers	52	62	11.3	6.8	9.5	5.7
Private tenants	17	10	13.5	7.9	11.3	6.8
LA tenants	31	28	14.2	8.3	12.7	7.5
Difference between owner occupiers and private tenants			2.2	1.1	1.8	1.1
Difference between owner occupiers and LA tenants			2.9	1.5	3.2	1.8

Source: based on Filakti and Fox (1995)

Owner occupation became more common and renting became less common during the 1970s. A comparison with Table 1.1 indicates that these trends continued during the 1980s. Table 2.1 reveals that owner occupiers of any given age or sex are least likely to have died. There was a larger mortality difference between local authority renters and owners than between private renters and owners. Tenure differences were larger in the 1980s than the 1970s, between men than between women, and also between under 65s than between over 65s[1] (not shown).

In an earlier study Fox and Goldblatt (1982) explored mortality between 1971 and 1975 in the LS by age in more detail. They found those in rented housing had higher mortality than those in owner occupied housing until very old age. They broke down mortality into various causes of death. They found that local authority tenants had the highest mortality for malignant neoplasms, circulatory diseases and respiratory diseases; however private renters, together with a small number whose tenure was not stated, had the highest mortality from accidents and violence.

[1] The authors did not say how 65 year olds were analysed.

Kogevinas (1990) examined fatality rates after diagnosis with cancer using the LS in the years between 1971 and 1983. Standardised fatality ratios (SFR) take into account age, sex and the length of time between when the cancer was registered and the time when the measure was taken of how many respondents with the cancer were alive or dead. An SFR of 100 is the overall average. Koginevas found that, among men, council tenants were least likely to survive cancers in general (SFR=110) and owners were most likely to survive (SFR=92). Private tenants were similar to council tenants (SFR=106). Among women, owners were most likely to survive (SFR=94) and there was little difference between council tenants (SFR=105) and private tenants (SFR=107). Tenure differences occurred whether there was a good or poor prognosis for survival from the cancer.

A similar analysis was undertaken by Leon and Wilkinson (1989). They considered cancers registered by respondents in the LS between 1971 and 1975, and whether respondents had died up to 1976. In this more limited time period there was only a significant tenure difference for women and not for men, once the prognosis for the cancer at each site was taken into account.

The tenure difference in mortality is also apparent for babies. Macfarlane and Mugford (1984) analysed data from the LS between 1971 and 1975. They used Standardised Mortality Ratios (SMR), which always control for age and sometimes sex. The average SMR is 100. The SMR for still births was twice as high for local authority tenants (SMR=124) as owners (SMR=56). Private renters were in an intermediate position (SMR=98). Differences were smaller for infant mortality up to one year of age. Infants born to owner occupiers again were less likely to die (SMR=91) but there was little difference between private and local authority renters (SMRs=108 and 107 respectively). There were some suggestions, however, that a child born to a mother living in her parents' household was not less likely to die in an owner occupying household than a rented household; this could suggest that such mothers had returned to the parental home after living in less favourable conditions.

Sundquist and Johansson (1997) analysed the Swedish Annual Level of Living Survey, a yearly random sample of 8000 individuals aged 16-84. They linked

interviews in 1979 to 1985 with the death register between 1979 and 1993. They found that housing tenure predicted mortality even after controlling for age, sex, marital status, years of education and health status.

Tenure has also been related to causes of death related to mental ill health. Johansson, Sundquist et al. (1997) studied suicides, linking information from the Swedish 1985 census to the Cause of Death Register between 1985 and 1989. There were 8310 suicides in a population of 628 3099. Using Poisson regression, they found renters were more likely to commit suicide than owners between the ages of 30 to 49 when controlling for overcrowding, area, marital status and ethnicity. Male renters were about a third more likely to commit suicide than male owners whereas female renters were two thirds more likely to commit suicide than female owners at this age. The problem with these two studies is that tenure is described as "living in a rented flat". It is possible that tenure (i.e. owned or rented) may be confused with dwelling type (i.e. flat versus house) although flats are more common in Sweden.

These Swedish studies suggest that there are tenure differences in mortality in countries other than the UK. Tenure is perhaps more commonly used in UK studies because socio-economic discriminators, such as income and education, used in other countries are less helpful. British people tend to be reticent about providing income information (ONS and GRO 2000). Education tends not to differentiate socio-economic status reliably due to a skewed distribution; in addition many changes in the education system over the last century make comparisons across generations difficult (Arber 1989).

Another approach to the relationship between tenure and health is through an ecological study. In an ecological study the proportions of different tenures in various areas, rather than each individual's tenure, are analysed. Additionally tenure is not always considered on its own, as a predictor of health, but may be combined with other indicators. Phillimore, Beattie et al. (1994) conducted an ecological study using the 1981 and 1991 censuses for the north west of England. They combined non owner occupation with non car ownership, overcrowding and unemployment to differentiate areas. They found that "mortality in the most favoured areas was one

quarter of the rate found in the worst affected localities" (Phillimore, Beattie et al. 1994:1126). Differences in mortality between the rich and poor areas grew between 1981 and 1991.

Sloggett and Joshi (1994) compared ecological and individual predictors of mortality from the 1981 census up to and including 1989 using LS data. Home ownership interacted with car access. Respondents who owned a home and a car were less likely to die than those who only owned a home or a car, or owned neither. They found those with rented accommodation and no car access had a 55% excess risk of dying compared with those who owned cars and homes. The difference between the other groups was not significant and their risk of dying was intermediate. They conclude that "housing tenure and access to a car [are] powerful predictors of mortality" (Sloggett and Joshi 1994:1473). Individual tenure seemed more important than the deprivation of the area, as measured partly through the tenure distribution within each area.

Sloggett and Joshi (1998) extended their 1994 findings to include data from the 1971 census and deaths from 1981 until 1992. Male tenants in 1971 were more likely to have died by 1992 than owners. Male and female tenants in 1981 were more likely to have died by 1992 than owners. These results were found despite controlling for area deprivation and individual unemployment, social class and car access in 1971 and 1981, and moving home.

These studies provide convincing evidence of a tenure difference in mortality with renters being disadvantaged compared to owners. In the next section I examine whether there are also consistent differences in morbidity.

Observed links between tenure and morbidity

Morbidity, or poor health, can be measured in a variety of ways; the studies described here include self reported health and clinically diagnosed health. Various types of health were measured: health in general, visits to health centres, mental health, and short term and long term health problems. There are two common measures of debilitating chronic health problems. The census measure asks one

question on whether the person experiences any limiting long term illness. The General Household Survey (GHS) poses two questions: firstly whether a person has any long standing illness and then secondly whether that long standing illness is limiting. These different forms produce slightly different results and will be distinguished in the text as LLTI (census version) and LLSI (GHS version). Studies of morbidity suggest that the same pattern emerges as with mortality: owners experience better health than renters.

Tenure has been linked to poor health in cross sectional studies. Gould and Jones (1996) analysed perceived limiting long term illness (LLTI) using the UK census sample of anonymised records (SARS). They grouped housing tenure into owner occupiers; renting from local authority, new towns or Scottish Homes; and renting privately or renting from a housing association. LLTI was most prevalent in local authority tenants. Private/housing association renters were similar to owners. This could imply that the health of council tenants is much worse than that of housing association tenants or that private renters outweigh the housing association tenants in that grouped category due to small numbers.

They also found a multiplicative relationship between tenure, social class and car access; those in local authority housing, with no access to a car and with jobs classified as social class IV or V are most likely to be in poor health. The healthiest people, on the other hand are owner occupiers or private/housing association renters with access to two or more cars, who are in social class I or II.

Arber (1989) analysed data from the GHS collected in 1981 to 1982. Although it is a survey there are still a large number of cases (n=28000). Data from men and women aged between 20 and 60 were analysed. Local authority renters were most likely to report limiting long standing illness (LLSI). Owners were least likely to report LLSI and private renters occupied an intermediate position. Male owners were half as likely as local authority renters to report LLSI and female owners only were a third as likely. This is different to mortality studies where in general there were larger tenure differences between men than between women. Arber found larger tenure differences in the thirties and forties age groups than in the twenties and fifties age

groups. The Swedish suicide study also suggested that tenure exerted the strongest effect for those aged between 30 and 49 (Johansson, Sundquist et al. 1997).

Another approach to assessing morbidity is to look at the number of times people visit the doctor. Carr-Hill, Rice et al. (1996) used the fourth national morbidity survey of general practices to study consultation rates. Data were collected on 502 493 consultations from 60 practices in 1991 and 1992. They found that owner occupiers were less likely to consult than non owner occupiers. Benzeval and Judge (1996) examined GP consultations through the OPCS omnibus survey using a sub-sample of 12 729 English respondents. They again found that renters consulted more.

The Health and Lifestyle Survey is a two sweep survey conducted in England, Scotland and Wales which includes self assessed and physical measures of health and housing tenure. Blaxter (1990) analysed data from the first sweep carried out in 1984/1985. There was a 73.5% response rate (n=9003). Four measures of health were combined into an overall health index: "fitness," based on physical measures such as blood pressure; "disease and impairment" based on chronic illnesses and their severity; "experienced illness", symptoms currently suffered; and "psychosocial malaise," based on the General Health Questionnaire (GHQ) (Goldberg and Williams 1988) which is a screening measure of psychiatric caseness. Owner occupiers were more likely than council tenants to be placed in the good or excellent health categories on the index. Like Arber (1993), Blaxter found a larger discrepancy between female owners and renters than between male owners and renters.

The above studies have shown tenure differences in health for many illnesses. However these analyses are all cross sectional so causal connections cannot be inferred; sick people may be more likely to become social renters, rather than social renters being more likely to become sick. The studies discussed next are longitudinal and thus can take temporal priority into account.

Tenure and car access in the 1971 UK census were found to predict LLTI recorded in 1991 census using the LS (Breeze, Sloggett et al. 1999). Renters without a car were most likely to report LLTI and owners with a car were least likely to report LLTI. This study focussed entirely on older people (aged 55 to 74 in 1971) so it is not known if the results would generalise to younger people. Respondents were only included if they were healthy enough to live in the community in 1971 and 1991 which excludes those who had died or moved into old people's homes. Despite renters' lower life expectancies and consequent lower likelihood of surviving the 20 year period, renters were still more likely to report a LLTI. In some analyses it appeared that respondents who moved out of owner occupation between 1971 and 1991 reported as high rates of LLTI as those who had never been owner occupiers. However on close inspection of the tables, it appears that differences were not consistently significant within genders or between age groups.

Sloggett and Joshi (1998) explored whether tenure in the LS in 1971 and 1981 could predict LLTI in the 1991 census. Female, but not male, tenants in 1971 were more likely to report LLTI in 1991. Male and female tenants in 1981 were both more likely to report LLTI in 1991. These results were found after controlling for area deprivation, unemployment and car access in 1971 and 1981, and for age, area and moving home.

Kogevinas (1990) analysed the incidence of cancer in his analysis of the LS in England and Wales. He found that there was a significant difference in the incidence of all cancers between owner occupiers, council tenants and private renters. For both genders, council tenants were most at risk of cancer. Male owners were least at risk whereas for women there was no difference between owners and private renters. Kogevinas found most of the differences in individual cancers were smoking or alcohol related in men; cancers of the larynx, lung, liver and gall bladder, for example, were least common in owner occupiers and most common amongst council or private tenants (although there were no significant differences in cancers of the bladder and stomach). In women there were also significance differences in lung and stomach cancers by tenure. The largest chi square values were found for cervical cancers. Ovarian cancer was an exception with owners being significantly more at

risk. Of course mortality and morbidity are not totally separate. Koginevas concluded by saying:

> "Overall elimination of the incidence differential between housing tenure groups for the cancers examined would result in an approximately 33 percent reduction in deaths in men and an 8 per cent reduction in women, among council tenants" (Kogevinas 1990:55)

Increased incidence of cancer is partly responsible for the higher mortality among tenants. Incidence differences were found to be more important than survival differences.

Faggiano, Zanetti et al. (1994) focused on incidence of cancer in 20 to 69 year olds in Turin, Italy, by linking 1981 census characteristics to the cancer registry in 1985-7. There were 4215 male and 3451 female cases and 16 913 male and 13 838 female controls. Men had a higher incidence of cancer overall if they were tenants rather than owners. Male tenants had a higher risk of cancer of the upper respiratory and digestive tract, stomach, larynx and lungs but not colon-rectum, skin, prostate or lymphomas /leukaemias than owners. Female tenants were only at a greater risk of cancer of the upper respiratory and digestive tract, and the cervix than owners. These results were found even after controlling for age, birth area and education.

The National Child Development Study (NCDS) follows all people who were born in Great Britain between 3rd and 9th March 1958. Data were collected at birth and at ages 7, 11, 16 and 23. Housing tenure was collected at ages 7, 16 and 23. Fogelman, Fox et al. (1989) analysed the tenure difference in five health measures: height; malaise inventory score which indicates depression; self rated health (excellent or good versus fair or poor); hospital admissions between age 16 and 23; and psychiatric morbidity assessed from health problems that had required regular supervision or specialist consultation or had involved hospital admission between age 16 and 23.

At age 23, 76% percent were reinterviewed (N=12 537). The majority of respondents who were in owner occupied or local authority rented accommodation at

age 7 were in the same tenure at age 16[2]. The majority of those in private renting households at age 7 were in owner occupied or local authority rented accommodation at age 16. At age 23 the researchers did not analyse data from respondents who were private renters or from respondents who were still living with their parents since those were likely to be transient tenures. Data from only 33% of the men and 55% of the women were thus available for analysis. This means the sample was not representative because there may be significant differences between young people still living in their parents' owned or rented home and others. They still found 'marked' differences in all health measures: at age 23 local authority renting men and women were less healthy than their owner occupying counterparts. Height showed the least tenure differentiation and self rated health and malaise the most. At age 7, differences were less marked apart from height (those in owner occupied accommodation were taller). At this age, boys in owner occupied households had higher rates of psychiatric morbidity.

The researchers also analysed the data by whether respondents had changed tenure. Respondents who were in local authority rented households at age 16 but were in owner occupied households at age 23 (upwardly mobile) had better self rated health, were less depressed and had less psychiatric morbidity than those who were in owner occupied households at age 16 but were in local authority rented accommodation at age 23 (downwardly mobile). There was no difference in height or hospital admissions. There was little difference for men whose parents had changed tenure between ages 7 and 16 except in psychiatric morbidity although there were larger differences for women. The researchers suggest that this may be due to the sample of women being more representative, as a larger proportion of the women had left their parents' homes.

In addition the researchers looked at the proportion of illness, on all measures, that could be explained by childhood tenure using the index of dissimilarity (ID) at age 23. The ID measures the proportion of cases that would need to be redistributed among tenure groups for all groups to have an equal chance of being ill. They

[2] This was in 1974; more local authority renters in a later cohort may have become owner occupiers.

compared observed percentages with expected percentages of ill health from the distributions of tenure at age 7 and 16. With tenure accounted for in this way the percentage expected to be ill is slightly less than the crude data. This suggests that tenure in childhood explains a small amount of illness in young adults. Exceptions were height and malaise where tenure explained more of the variation and psychiatric morbidity in men where the ID increased rather than decreased (NB at age 7 there was more psychiatric morbidity in children living in owner occupied than social rented households). The authors conducted a similar analysis using social class with similar results. Thus it is likely that the relationship between socioeconomic status and tenure is important.

In conclusion, many studies have shown a relationship between home ownership and mortality or morbidity. In most studies the relationship appears to hold for all age groups, from infancy to old age, although the largest differences occur between the ages of 30 and 50. Possible explanations are lifecourse factors making tenure more or less important at different ages, the extent of ill health at each age group which could mask or emphasise differences, or the tenure distribution at different age groups. The relationship is also true for both sexes. In mortality studies tenure differences often appear to be stronger for males whereas for morbidity studies tenure differences are usually larger for females. These gender differences may reflect the fact that on average men have lower life expectancy than women whereas women have a higher risk of minor morbidity than men.

Studies that have questioned the link between tenure and morbidity

A minority of studies have not found tenure to be a predictor of health or mortality outcomes. In some studies the relationship between tenure and health disappeared after controls and in other studies no initial correlation was found.

Mann, Wadsworth et al. (1992) found that an initially observed relationship between tenure and health disappeared after controls. They analysed data from the MRC National Survey of Health and Development which followed up all non manual and a quarter of manual social class babies born between 3rd and 9th March 1946. The

authors included tenure in an analysis of lower respiratory health in the respondents' offspring. After controlling for parents' and grandparents' respiratory illness, housing circumstances, mother's education, social class and smoking there was no association between tenure and lower respiratory illness. This may be because only a specific illness measure was used or because factors on the pathway between tenure and respiratory health (for example housing circumstances) were included in the model.

Using data from the LS, Moser, Pugh et al. (1988) linked individual characteristics from the 1971 census to mortality between 1976 and 1981. They specifically chose to look at women aged 15-59 at death who were not living in institutions. Divorcees and widows were excluded as were single women without an occupational class and married women whose husband did not have a social class assigned. Owner occupation was an important predictor of Standardised Mortality Ratios of married women in bivariate analysis. However in single women "having taken access to a car into account housing tenure contributed little" (Moser, Pugh et al. 1988:122). Being an owner occupier itself may be of less importance to women without families.

The bivariate relationship between tenure and health may vary in different parts of Britain. In a recent ecological study, Brimblecombe, Dorling et al. (1999) studied mortality in Oxford by ward. The proportion of owner occupiers in each ward did not correlate with mortality in the ward. High mortality was more strongly associated with areas with high numbers of properties in poor condition and areas with the largest numbers of single men living in hostels.

In the previous section it became apparent that the tenure/health association varied across age groups and sexes. In this section it appears that tenure's importance may also vary between marital statuses and localities. This calls into question any universality of the relationship between tenure and health. Similarly the relationship between tenure and health may disappear once socio-economic status and housing factors are taken into account. This suggests that it is necessary to look more closely at what tenure means.

Not all academics are convinced by the importance of tenure. Barlow and Duncan argue that tenure has been overused as a term:

> "For many dimensions of housing, tenure will be peripheral in substantive terms and also in causal terms and so explanation via tenure categorisation will be misleading." (Barlow and Duncan 1988:229)

These authors suggest that more direct measures of socioeconomic circumstances, household type and housing conditions, may be preferable to tenure. The meaning of tenure, Barlow and Duncan argue depends on specific laws of the country and thus tenure does not mean the same thing world wide. Thus the research reported here does not claim to be about tenure in all times and all places but simply about tenure in the UK at the end of the twentieth century. Additionally the meaning of tenure changes over time. Tenure was first used in medieval Britain in terms of rights over land rather than housing. In the next section I begin to look at what tenure means today by exploring some of the common explanations for the link between tenure and health.

Contrasting explanations for the link between tenure and health

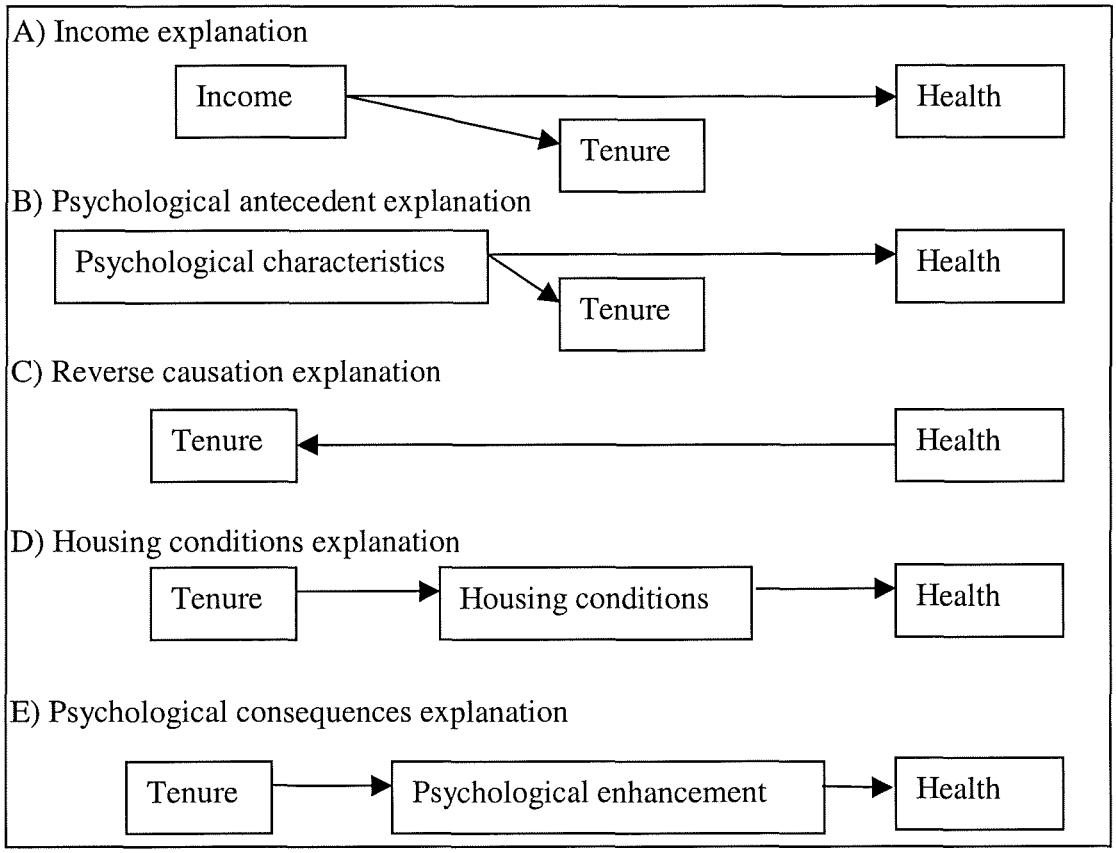
Various explanations have been suggested for the relationship between tenure and health (Box 2.1). It has been suggested that tenure of itself is not important at all and is simply a proxy for other explanatory factors:

> "Although social class and tenure are associated with 'poor' health they do not in themselves cause ill-health, rather they act as proxies for a range of more specific factors which are not modelled explicitly."
> (Marsh, Gordon et al. 1999:48)

It has been suggested that high income (explanation A) or superior psychological characteristics (explanation B) may facilitate home ownership. Income and psychological characteristics independently predict health so tenure is simply a marker rather than important itself. Other researchers argue that causality runs in the opposite direction: healthier people become owners (explanation C). I discuss these three explanations in the remainder of this section. Later in this chapter I discuss the hypothesis (explanation D) that tenure is important for health because owner occupied accommodation is healthier in terms of its condition, its design and the area in which it is situated. In chapter 3 I turn to explanation E: tenure may be important

because owner occupation enhances psychological attributes. According to this hypothesis tenure, as a way of holding property, may itself be important, rather than characteristics of the property or the inhabitants. Of course these explanations are not mutually exclusive: income or physical characteristics of the dwelling may also encourage positive psychological characteristics.

Box 2.1 Possible explanations for the relationship between tenure and health



Proxy explanations

In this section most studies I describe use tenure as a proxy for economic status, although a few studies see tenure as a proxy for psychological characteristics or housing conditions. I start by noting studies in which tenure has been seen as proxy particularly for economic status. I then look at a study that was designed to test whether tenure was just a proxy for income or psychological characteristics. Finally I look at other multivariate studies, that were not designed to explore whether tenure was simply a proxy for income, but can be used to do so as they included both tenure and income in their models.

Housing tenure is often used as a proxy measure of economic circumstances. Housing tenure is much easier to measure than income and may be seen as less of an intrusion of privacy. Some authors argue that housing tenure is a better proxy for wealth than social class because it applies to the household rather than the individual and so avoids complex combinations of husbands' and wives' social classes or assuming that one member's social class is dominant (Arber 1989).

An example of a study where home ownership has been used in this way is Phillimore, Beattie et al's (1994) ecological study. They explain that they picked home ownership to examine differences in mortality because it "reflect[s] distinctive aspects of material wellbeing." (Phillimore, Beattie et al. 1994:1125). In another study the tenure effect was 'explained away' with the following sentence: "we attribute this [tenure] effect to individual low income" (Sloggett and Joshi 1994:1473).

Work on the NCDS has regarded tenure as a way of explaining social class differences in health. Tenure was seen as a measurement of "material circumstances" (Matthews, Manor et al. 1999:53). The data were explored to determine which variables reduced the class difference in the odds of reporting fair or poor self assessed general health. Social classes IV & V were compared to social classes I & II. At age 33 current housing tenure made the second largest reduction in class differences in women (after education) and the third largest reduction in men (after education and job insecurity). Childhood tenure (at age 11) also was important. It was the seventh most important variable for women and for them was more important than working characteristics, health related behaviour and marital status in explaining class differences in health. For men, childhood tenure was ranked ninth and was more important than unemployment and family structure in explaining class differences in health. There was a strong relationship between tenure and social class for men and women. However childhood tenure was more important for women than men (Matthews, Manor et al. 1999; Power, Matthews et al. 1998).

In three health district authorities of Bristol all women expecting a baby between April 1991 and December 1992 were invited to participate in the Avon longitudinal study of pregnancy and childhood. Eight months after their children were born, 11040 mothers completed a questionnaire on whether they had suffered 16 common conditions since their child was born. Mothers in rented homes were more likely to report being depressed or anxious and having experienced headaches and migraines. However renters were less likely to report haemorrhoids and coughs and colds, and there was no difference in back ache between renters and owners. Further analysis suggested that part of the reason that owners reported more haemorrhoids was because they were older (as owners may have families later). The author's conclusions were that stress related illnesses were associated with material deprivation but common conditions following childbirth and minor respiratory illnesses were not related to material deprivation (Baker 1997). Again tenure was seen largely as a measure of socio-economic position (material deprivation).

That material deprivation is an important reason for tenure differences in health is shown by the Breadline Britain 1990 survey. The survey involved 1319 face to face interviews with a quota sample of over 16s and an additional 512 quota interviews with people in deprived areas (Gordon and Pantazis 1997). Community mental health was measured through questions on financial worries over the last month; respondents were asked, for example, whether lack of money had made them feel bored or a failure over the last month. The average score for local authority renters was three times higher than that of owner occupiers. This suggests that financial problems were important in mental health differences between social renters and owners. In this analysis no attempt was made to distinguish any housing effect on mental health: they only asked about mental health difficulties in regard to money. They did note however that those in poor condition homes and in bad neighbourhoods also scored higher, suggesting that the poorest people in society additionally reside in worst housing circumstances (Payne 1997).

There is some evidence that home ownership should not just be used as a proxy for income or economic deprivation. Macintyre, Ellaway et al. (1998) compared 1074 owner occupiers, 604 public sector tenants and 30 people from other tenures in the

West of Scotland. Nurse interviewers collected data on physical and self reported health. They found bivariate relationships between tenure and various health measures. Housing tenure was related to the following: GHQ, number of symptoms and the number of reported long standing illnesses, systolic blood pressure, standardised forced expiratory volume (FEV) and waist/hip ratio. GHQ, standardised FEV, waist hip ratio, number of illnesses and number of symptoms were still related to tenure after controlling for age, and sex.

The authors also controlled for income and self esteem. They controlled for self esteem because psychological characteristics could make a person healthier and make him or her more likely to own a home. However the results of their analysis were that:

> "None of the health measures which were significantly associated with tenure... after controlling for age and sex subsequently ceased to show significant associations with tenure... after controlling either for income or self esteem." (Macintyre, Ellaway et al. 1998:661)

Additionally they found that the magnitude of the relationship between health and tenure did not attenuate greatly after controls. However they note that more work is needed on this relationship. They only measured self esteem although other psychological characteristics could be more important; income may not be a good measure of wealth.

Despite these caveats, their results imply that the relationship between tenure and health may not just be due to income being related to both tenure and health. Other studies have also included tenure and income in models predicting health, although their aim was not specifically to contrast tenure and income.

Using the GHS, Arber and Ginn (1993) explored predictors of general health and disability in 4000 older people (age 65 and over) in 1985. After controls (age, social class, car in the household and income), owners were a third more likely to report good general health than social renters. Tenure significantly predicted disability in women whereas car access significantly predicted disability in men. Income was not

a significant predictor of disability in multivariate analysis suggesting that tenure was accounting for the income effect.

A similar analysis was conducted modelling self assessed health from GHS data collected in 1992/3, 1993/4 and 1994/5 and disability collected in 1994/5 (Arber and Cooper 1999). Respondents aged 60 or over were included. After controlling for age, sex, marital status, social class and household income, local authority renters were more likely to report 'fairly good' or 'not good' as opposed to 'good' health and severe disability than owners. In the self assessed health model, after additionally controlling for degree of disability, private renters were less likely to say their health was 'fairly good' or 'not good' than owners.

The authors suspected that some of the tenure difference might be due to health selection with less healthy older people being more likely to enter local authority sheltered accommodation. They therefore split owners and local authority renters into those who had been in the tenure for less than five years or five or more years. Long term local authority renters were still significantly less healthy than long term owners. In these models, income was a significant predictor as well as tenure, suggesting independent effects of tenure and income. In this analysis, data from men and women were analysed together and interactions were not tested to see whether the tenure difference was the same for both sexes.

Studies in countries other than the UK have also used tenure and income in models predicting health. Again the aims were not to specifically look at tenure. Partial support for Macintyre et al. can be found in a prospective American study of older people. Goldman, Korenman et al. (1995) used the Longitudinal Study of Aging (LSOA) to study mortality and disability. The base line interviews were conducted with 7500 non institutionalised persons age 70 or over in 1984. The data were linked to hospitalisation records and to the National Death Index up to 1990. They collected baseline measures of age, ethnicity, health status, marital status, social contacts and socio-economic status. The socio-economic status measures were whether the respondent had private health insurance (more important in the USA than UK), income to needs ratio, income, tenure and years of education.

After controlling for all other variables, women who were renting in 1984 were more likely to have died or have become disabled by 1990 than women who were owners in 1984. There was no difference for men. None of the socioeconomic status measures were significant predictors of mortality among men. This may be because many such men would have been living in institutions by age 70 and so were not included (mortality rates were lower among black men suggesting that disadvantaged men who survive to age 70 may have an immunity to the threats posed by low socio-economic status analogous to people who are immune to particular diseases). Given that women have longer life expectancies, the socioeconomic disadvantage may still predict mortality and disability at this age. Social factors such as size of networks and attending events predicted mortality in men. As owners had higher scores on these variables, social issues may be an alternative explanation for why there was no tenure difference in men.

In another study of older people, Dahl and Birkelund (1997) examined a stratified random sample of 964 Norwegians aged 65 and over. After controlling for age, marital status, childhood conditions, father's social class, own social class, income and economic difficulties, tenure did not predict serious illness. Female renters were more likely to report mental health problems but there was no tenure difference for men. Occupational social class was predictive of illness in men but not women. Income was a significant predictor in all four models. Again this may reflect the reduced life expectancy for men: less healthy men may have died before age 65.

Another Scottish study has also found that housing tenure is related to health after controlling for income. Pell, McMahon et al. (1999) used ecological and individual health measures in their analysis of the Scottish Housing Condition Survey (SHCS). They linked the SHCS (N=20000) to the 1991 census and to the General Registrar's Office database for Scotland that records all NHS hospital admissions and deaths. From these data they developed ecological measures of health such as the likelihood of being admitted to hospital in a census output area (the SCHS itself contains some self reported health measures which could be analysed at an individual level).

Tenure differences in health were apparent using ecological and individual measures even after controls: mean age of household, number of people in the household, dwelling type, rurality, area census characteristics, coldness and damp as well as employment status and income after housing costs were also entered into the models. Social renting was associated with being more likely to be admitted to hospital, spending more time in hospital, having more expensive procedures in hospital and being more likely to die there; additionally, social renters reported more respiratory disease and heart disease. Their results suggest that tenure is more than a proxy for income and the conditions of the home, and may in itself be health promoting. However the analysis of the hospital data were conducted at a census output area level which the authors suggest could overemphasise the importance of tenure, as areas may be homogenous for tenure but not for other variables such as central heating and income.

In sum, Macintyre, Ellaway et al. looked specifically at whether the effect of tenure disappeared when income was added to a model, and found that the tenure effect did not disappear. Some other studies also suggest that tenure predicts health after controlling for income, although in men this may be less strong in old age. Tenure it seems may be more than just a proxy for income. Macintyre, Ellaway et al. suggest that buying a home is a way of using income that affects health. In other words characteristics of bought homes may be health promoting whereas characteristics of rented homes may be health damaging. These features will be explored in the second part of this chapter.

The reverse causality hypothesis: health status causes tenure

The significance of reverse causation has been debated. I start by explaining what the reverse causation hypothesis is and I then look at its importance in explaining the tenure and health relationship.

There are two forms of reverse causation in relation to tenure and health: firstly poor health increases one's points reducing one's time on the waiting list for social rented housing, thus ill people explicitly get priority for social rented properties (Easterlow and Smith 1997; Smith and Mallinson 1997). Secondly, people in poor health are

denied access to the owner occupied sector through reduced capacity for earning, physical difficulties in searching for a suitable property and discrimination by lenders and estate agents (Burns 2000; Easterlow, Smith et al. 2000).

It is unlikely that reverse causation is the whole explanation for the tenure difference given Arber and Cooper's (1999) finding that tenure was still significant after accounting for tenure changes due to health. Marsh, Gordon et al. note that:

> "Empirical work that has sought to test for health selection in the broader areas of social class or employment position... found little evidence for the operation of such effects. We are not aware of [epidemiological] studies which examine in detail the possibility of an independent health selection effect which is the product of the operation of the housing market." (Marsh, Gordon et al. 2000:424)

Thus although epidemiologists and other health researchers have established a link between home ownership and health it is worth bearing in mind that their methods usually do not uncover the exact causal mechanisms.

I can now make some conclusions about the observed relationship between tenure and health:

- There are empirical associations between tenure and both mortality and morbidity
- Results from multivariate analysis, however, are mixed as to the strength of the relationship between tenure and health after various controls
- Tenure is often assumed just to be a proxy for income and therefore many authors do not directly examine reasons for the link

Work on the MRC National Survey of Health and Development and the Breadline Britain Survey implies that the relationship between tenure and health may be partly to do with housing circumstances. In the following section I consider housing related issues that may be important for the tenure and health relationship.

2.2. Physical characteristics of social rented and owner occupied homes and implications for health

What do we know about differences between owned and rented homes? In the remainder of this chapter I examine the connections between the physical characteristics of housing tenures and their implications for mental and physical

health. Housing conditions and health were an issue in the nineteenth century but since then were seen as less important when major infectious diseases became less common. It was only when the Black Report in 1980 revealed that British people with low socio-economic status were more likely to suffer poor health and were living in poor housing that interest was rekindled (Morris 1996).

Tenure differences in dwelling characteristics

In this section, I start by describing Ellaway and Macintyre's study of health related differences in the housing circumstances of owner occupiers and social renters. That study identifies various differences that are likely to be important. I then describe why it is difficult to make conclusions about how housing related issues may affect health. After noting this I review the literature on the seven pertinent housing issues identified by Ellaway and Macintyre.

A study that considers the possible problems of housing tenure with regard to health is that of Ellaway and Macintyre (1998). They studied 691 people from two contrasting areas of Glasgow who had been interviewed by nurse interviewers in 1992. The sample comprised 55.4% owner occupiers and 42.1% public renters. Their results showed that renters were significantly more likely to report noise, hazards, vibrations, dampness and being unable to heat their home in winter. Table 2.2 shows the large percentage differences between owners and renters for these stressors:

Table 2.2 Housing stressors in Glasgow

Reported stressor	Owners %	Tenants %	Number of times more likely to report
cannot heat home in winter	2.8	35.1	13
dampness	12.0	43.7	4
noise	3.9	16.1	4
vibration	2.9	8.5	3
hazards	7.3	17.5	2

Source: (Ellaway and Macintyre 1998)

Heating the home appeared to be the major difference between tenures with noise, dampness and vibrations being 3 to 4 times more commonly reported by tenants.

Ellaway and Macintyre argue that this discrepancy is not likely to be due to over-reporting by unhappy tenants because the nurse interviewers made independent assessments of damp in the homes which were closely correlated with respondents' reports. Although there was no tenure difference in reported overcrowding or too much space, they found a significant difference in an objective measure of crowding (number of persons per room). This implies that crowding was underreported which they note is consistent with other studies. They suggest that people in rented accommodation may have lower expectations for the amount of space that they need.

These stressors were combined to provide a mean score. This mean score was significantly related to the number of long standing illnesses and the Hospital Anxiety and Depression Scale (HADS) depression score. Some differences could be due to the problem of negative affect (Watson and Pennebaker 1989). Respondents who report worse housing and worse health could do so because of a general negative affect rather than because they in truth do have worse housing and health. Ellaway and Macintyre's checks with interviewers' observations and objective measures of crowding suggest that the relationship might be due to more than negative affect.

They also divided respondents by housing type (flat, four in a block flat and house). People in houses had lower housing stressor scores than those in flats. Housing type was also related to anxiety and depression. Seven housing issues were therefore identified in this study which could explain why housing tenure is related to health. Rented homes were more likely to be colder, damper, noisier, vibrate more, have more hazards, be more overcrowded and to be flats. Ellaway and Macintyre's study was descriptive; its purpose was to find which factors were important rather than to examine causal mechanisms as to why they were important. The possible health effects of these factors will be considered in more detail. I now discuss issues in studying health effects of housing.

Why is studying the health effects of housing difficult?

Before going further it is necessary to note that although there has been a long-standing interest in the relationship between housing and health it is quite difficult to

collect data on this subject. Evans, Wells et al. identify three particular problems with the evidence on housing and health: "self selection, spuriousness and measurement" (Evans, Wells et al. 2000:8). Self selection refers to the issue that often those with poor health find themselves in poor housing rather than poor housing leading to poor health. Additionally those in better health may be better able to leave poor housing (see section 2.1). Two ways to overcome this are random assignment to housing and prospective studies of interventions comparing effects before and after a change in housing. When looking at evidence that drugs may promote health it is fairly easy to randomly assign patients to intervention and control groups but it is less easy to randomly assign housing due to other factors that impact on housing allocation. Many studies of housing and health have not used the experimental approach; in fact a systematic review showed that only 11 intervention studies have thus far been completed (Thomson and Petticrew 2000).

Spuriousness occurs when a variable's importance is inflated because it is confounded by an underlying factor. Spuriousness can result from self reported data; for example results can be affected by a generalised negative affect (discussed earlier in reference to Ellaway and Macintyre's study). Additionally spuriousness can be caused by closely related variables: housing may be related to health simply because the inhabitants of certain houses have higher incomes rather than anything to do with the housing itself. Thus there is a need to control for income yet one should also be aware that the relationship between housing and health may vary between income groups: housing may exert a stronger effect for people without financial resources.

The issue of measurement relates to problems with scales used to measure housing and health such as having a small number of items or too few response choices; or the relationship between housing and health may be non linear when many statistical techniques are designed to measure linear relationships; additionally there may be not enough variation in housing quality as recorded by the scale to show a difference in health. I am not certain whether this last point is as important as Evans, Wells et al. (2000) claim. I suggest that if there is insufficient variation in the measurement this may be the case in real life: therefore devising a measure that makes the difference seem greater may overemphasise the importance of housing conditions.

The issue of what to include as measures of housing deprivation is an issue for scale development. Marsh et al, using the NCDS, have successfully shown that poor housing conditions from childhood onwards can have implications for health in adulthood (up to age 33) even after controlling for area, congenital problems and employment status (Marsh, Gordon et al. 1999; Marsh, Gordon et al. 2000). However the authors note that their measure of housing deprivation became less useful in later sweeps of the study as the measures of deprivation became out of date. For example very few people now have problems with a lack of basic amenities, such as indoor toilets or running water, compared to the 1960s. In this review I will therefore concentrate on the issues related to tenure in Ellaway and Macintyre's recent work: damp, cold, noise, overcrowding, dwelling type, general state of repair and area.

Seven health related physical aspects of housing

I now summarise how each physical aspect of housing raised by Ellaway and Macintyre (1998) may be related to health, as I do not have space to do justice to the subject here. For more detailed evaluations see Thomson and Petticrew (2000), Evans, Wells et al. (2000), Hunt (1997), Ineichen (1993) and Lowry (1991). The studies I have chosen to mention provide a flavour of the available literature both internationally and in the Glasgow area where my study was conducted. I selected them on the basis of sound methodology, recency and relevance to housing tenure and health.

Damp

Damp has been associated with various types of health by studies using a range of different methods.

Williamson, Martin et al. (1997) conducted a case control study on the effect of damp housing on asthma. This involved 102 patients, aged 5 to 44, with physician diagnosed asthma. Physician diagnosis is important because diagnosis of asthma is problematic (Hunt 1997). The asthmatics were all patients at a Glaswegian asthma clinic and the controls were randomly selected from the Greater Glasgow Health Board Community Health Index. All the respondents lived in the postcode districts G51-53. They were matched (for sex, age (within 5 years), housing tenure, duration

of tenancy, overcrowding, gas cooking, presence of a household pet, clothes dried indoors, central heating and paraffin heating) with 196 controls. Although they were not matched for employment status, household income, smoking or the presence of another smoker in the household, the statistical models used took this into account. The study was particularly useful in that it did not just rely on self report measures of dampness: the homes were assessed by a qualified surveyor.

Asthmatics were two to three times more likely to live in damp housing than controls. The investigators also found a "dose response" relationship (Williamson, Martin et al. 1997:233): as the severity of dampness and mould increased, the severity of air flow obstruction and asthma increased. Self report and objective measures of dampness showed the same pattern, although asthmatics and control respondents tended to underreport dampness. However the authors did note that the asthmatic respondents were poorer and also did not heat their homes to the same temperature. Nevertheless this study indicates a relationship between damp housing and asthma.

These sorts of results are not only found in a Scottish conurbation. Packer, Stewartbrown et al. (1994) analysed data from the Worcester City Health and Lifestyle postal survey collected in 1990. There were 2353 completed questionnaires (a 52% response rate). Young people and men from poorer wards were under represented. Nine percent of people, in this more wealthy area of the UK, lived in houses they described as damp. This was consistent with other indicators of the prevalence of damp in the area. Five percent of their owner occupiers, 28% of public renters and 23% of private renters reported damp.

After controlling for sex, age and social class 38.8% of those in dry housing reported long standing illness whereas 54.9% of those in damp housing did so; as the reported damp became more severe, migraine, varicose veins, neurological problems, injuries and accidents were also more common. The problems with the upkeep of damp housing were also implied by the study, as the Nottingham Health Profile (NHP) suggested that:

> "People in damp housing were significantly more likely to report that problems in their health affected their ability to look after their home."
> (Packer, Stewartbrown et al. 1994:558)

This could either mean that the damp homes were harder to look after or that their inhabitants were more seriously ill.

However the study also found that while 10% of the owner occupiers in damp housing reported chest problems, only 2% of those in damp council rented housing did. This could suggest that ill tenants are moved out of damp housing by the council whereas owner occupiers are trapped in their homes, and rather than people's housing resulting in illness, illness affects people's housing. However not too many conclusions should be drawn from their result as there were only 175 people in damp housing in the survey and the result was only of borderline significance (p=0.056). This study does show that a postal survey methodology was able to find similar results to more objective interviews and surveyors' reports.

Damp has also been linked to ill health in other countries. Dales, Zwanenberg et al. (1991) distributed questionnaires through schools to parents of 5-8 years olds in 30 communities in Canada. After excluding those who did not live in permanent homes (e.g boats, mobile homes) and children with cystic fibrosis, 13 495 cases were available for analysis (an 85% response rate). After adjusting for race, age, sex of child and respondent, parents' education, gas cooking, number of household smokers and area, reported damp or mould in the home was associated with cough, wheezing, asthma, bronchitis, eye irritation and non respiratory symptoms. Children with coughs were about 2 ½ times more likely to live in housing with damp or mould. The link could be to do with parents of ill children being more aware of problems with their housing but the authors felt this was unlikely because children with known damp or mould allergies were not reported as having damper houses.

Verhoeff Vanstrien et al. (1995) examined why damp housing may result in poor respiratory health. In a Dutch case control study they compared 259 children with chronic respiratory symptoms against 257 control children. They made a visual inspection of dampness in the home and gave parents a questionnaire about

dampness in the previous 2 years. Children from damp homes were more sensitised to dust mites and moulds as they had elevated serum immunoglobin E (IgE). Dust mites and moulds are more common in damp houses. When they compared cases and controls with elevated serum IgE they found a connection between "damp housing, sensitisation to dustmites and/or moulds and childhood respiratory symptoms." (Verhoeff, Vanstrien et al. 1995:103). This was one of a growing number of studies that suggests that damp housing causes respiratory ill health because of associated dustmites and moulds. Some people have a genetic trait which means they are allergic to dustmites and moulds whereas others can develop allergies if exposed to high levels of dustmites and moulds over long periods (Morris 1996).

Besides physical health being affected by damp, Hopton and Hunt (1996) also found a relationship between damp and mental ill health. They interviewed people from 451 households on a local authority housing estate on the outskirts of Glasgow. They found reported dampness was a significant predictor of scoring 5 or more on the General Health Questionnaire (GHQ).

None of these studies are flawless. Physicians may be more likely to diagnose inhabitants of damp housing with asthma, those with damp housing may be more likely to go to the doctor with asthma symptoms or controls may also have asthma symptoms that aren't diagnosed. Nevertheless together these studies using different measures and methods and in different locations build up a convincing picture of the link between damp housing and illness.

Cold

In general terms, it seems plausible that cold housing should be linked to poor health. Evidence for the relationship is not easy to find, however, as the studies below suggest.

Emond, Howat et al. (1997) studied 117 preterm infants and 226 full term controls in Avon, England. They measured housing conditions using a self report questionnaire. A stratified sample (10%) were visited by a housing surveyor to validate the questionnaire. Parents prospectively filled in diaries of their child's health and

contact with the health services. Central heating and warmed living rooms were associated with reduced diarrhoea and vomiting for controls and cases in the Avon study. However upper respiratory tract infections were found to be more common in homes with more heating. This study shows the importance of examining specific health outcomes and not assuming similar effects on all health measures.

Similarly, there was not a constant relationship between housing conditions and different aspects of health in Pell, McMahon et al's (1999) analysis of the SHCS: cold and damp were only associated with self reported, rather than objectively measured, health indicators such as time in hospital. The authors' explanation for the lack of a relationship is that the objective measures were ecological rather than individual and so the level of aggregation used was too high.

Cold can also affect mortality as measured by excess winter deaths:

> "Britain has the highest excess of winter deaths (40000) in northern Europe. Even Sweden with far lower winter temperatures, had fewer excess deaths." (Court 1994:1251)

This may point to poor housing conditions in Britain. In another study, excess winter deaths in all parts of the UK were found to be higher than France, West Germany, Denmark, Norway, Austria, Sweden, Finland and Canada despite the UK having higher average winter temperatures (Boardman 1986). Using the Milton Keynes Energy Cost Indicator, Boardman found that lower building standards in the UK meant that fuel bills in a new house in the UK would be 75% higher than in a similar Finnish home. Heating may be more important than overcrowding (which is more common in Finland) for health. Older houses in Britain are more inefficient even when central heating is taken into account.

Cold is particularly a problem for elderly people who spend more time being sedentary at home and are more prone to illness. The provision of central heating in homes is not equal across the population. Those on low incomes are less likely to have central heating. Boardman concludes that "the poor may suffer in three ways: from undernourishment, cold and possibly living in a home that is unfit or in need of major repairs" (Boardman 1986:17). The consequences are higher mortality rates

especially for the very young and the very old. As inhabitants of poorly insulated housing tend to be on low incomes, it may be particularly difficult for them to afford to heat their homes adequately, even if they have central heating installed; this problem has been termed fuel poverty (Lowry 1991). In Scotland fuel poverty is an increased threat due to the climate (Ineichen 1993). Cold may be a particular problem in public rented housing which was built at a low cost with little insulation and can be draughty.

Gemmell (2000) linked housing variables from the 1996 Scottish Housing Conditions Survey to postcode sector mortality. Lack of central heating predicted excess winter all cause mortality and excess winter deaths from respiratory disease. Fuel poverty (predicted total running cost/ amount spent on fuel) predicted excess winter deaths from heart disease. This study provides less ambiguous support for the relationship between cold housing and health.

Overcrowding

Hunt (1997), in her review of housing and health, sums up the current information on overcrowding as follows: "currently very little is known about the independent affects of overcrowding on physical health" (Hunt 1997:163). She notes that being in close contact with others spreads many infections, and that crowding has negative affects on mental health.

Bartley, Power et al. (1994) looked at males born in 1958 in the NCDS. People who lived in overcrowded conditions (more than one person per room) and whose household did not have the sole use of an inside toilet, hot water supply or a bathroom were more likely to have a low birth weight. Low birth weight is associated with coronary heart disease and respiratory disease in later life. Therefore living in poor conditions in one time period may affect health in another time period.

In the Avon study overcrowding was associated with more lower respiratory tract infections in pre term infants but fewer infections in controls (Emond, Howat et al. 1997). This suggests that overcrowding may be especially bad for those already weak.

There are various ways to measure overcrowding. Schmitt (1966) compared population per acre, persons per room, household size, couples doubled up, and units in the building, in the 42 census tracts of the Honolulu Standard Metropolitan Statistical Area in 1950. He analysed six health measures: all cause death rate, infant death rate, suicide rate, rates of new cases of tuberculosis and venereal disease and first admissions for mental disorders. Schmitt does not provide significance levels but appears to regard correlations of .7 as a cut off point. Together the five density measures correlated above .7 with the all cause death rate, TB rate, VD rate and the rate of hospitalisation for mental disorders. Individually, population per acre correlated most highly with all the health measures except the suicide rate. After controlling for education and income the only correlation above .7 was between population per acre and venereal disease.

There is also some evidence that living alone, as well as overcrowding, may be associated with poor mental health suggesting that there is a j-shaped relationship between mental illness and density. Galle, Gove et al. (1972) found a much weaker effect of persons per room on psychiatric admissions than they expected in a study of the negative effects of density in Chicago. Instead they found a high correlation between admissions and living alone. They suggest that this maybe because people who live alone may have difficulties relating to other people as a result of their mental illness rather than due to housing factors; thus poor mental health results in living alone rather than living alone being the cause of poor health. Similarly in Schmitt's study, as household size increased death and illness rates were reduced slightly.

Overcrowding may, it appears, be more complex than cold or damp because undercrowding as well as overcrowding is associated with poor health. In Britain houses tend not to be perceived as health damaging because they are too hot or too dry.

Noise

Noise is a major issue for some people. The Chartered Institute of Environmental Health (1995) found that the largest source of complaints about noise was objections

to noisy neighbours. In some extreme cases this has had health impacts in that victims have resorted to violence. Although this noise is not to do with the house itself, the problem is exacerbated in "poor quality housing with insufficient sound proofing." (Walker 1996:1198). This is more likely in rented housing which is more likely to be flats and be cheaply built.

Dwelling type

Flats often have many problems, (such as noise mentioned in the last paragraph) and so extracting the precise effect of dwelling type is difficult. This problem occurs in the studies described below.

Blackman, Evason et al. (1989) contrasted two low income housing areas in Belfast. One area consisted of flats which were in poor condition and the other area contained good condition houses with gardens. In the area with flats, residents had more chronic illness and more had visited the doctor or a hospital in the last month. They also experienced more accidents. A third of the adults reported chronic illness in the flatted area. This was approximately double the amount in the house area. These extra illnesses were likely to be mental or respiratory disorders. In the flatted area the dwellings were more likely to be cold and damp. There were also more children, more single parents and more smokers in the flatted area. Therefore although in both areas households were living on the poverty line, there were indications of more social breakdown in the flatted area.

In a cross sectional study it is not possible to establish whether worse health was a result of housing allocation policy, housing conditions or housing design or other factors. The authors did try to look at housing compared with poverty by excluding respondents who were above the poverty threshold (140% of supplementary benefits) in some analyses. Poorer households were then more likely to be ill in the flatted area. Like overcrowding, flatted accommodation may be worse for those already disadvantaged.

Birtchnell, Masters et al. (1988) compared young married women living in various types of housing in Thamesmead, a new town near London. Depression was highest

in women in flats with raised walkways. They attributed this to the grim nature of the walkways. They were surprised to find that women in this type of dwelling were worse off than women in high flats. However the women in the high flats had fewer (or often no) children so perhaps had less stressful lives in general. This study shows how difficult it is to separate housing issues from household issues. McCarthy, Byrne et al. (1985) conducted a survey of different types of housing in good and bad council areas. Areas with housing that was difficult to let were defined as 'bad' and contrasted with other 'good' areas. They found an interaction between housing type and housing area. High rise blocks of flats were the worst type of housing but they were only significantly worse if they were located in a bad area. This study too shows how different housing issues are interlinked.

Although worse health has been found in flats it has proved very difficult to establish whether the flats themselves are the problem, the area in which the flats are built is the problem or whether the people who end up living in them have more problems anyway.

General state of repair

In this section I consider studies which have not just focussed on cold, damp or noise but those that have considered a range of issues that may vary when a dwelling is improved. I then examine the relationship between state of repair and tenure.

Home improvement schemes do not always just tackle one aspect of housing so it is not always possible to tell whether cold or damp or noise is causing the problems. However, demonstrable differences in health do occur. Hunt and McKenna (1992) studied housing in three priority action areas in Liverpool. They interviewed representatives of 752 households about their health and the conditions of their dwelling; the interviewer was also trained to assess the physical condition of the inside of the house. An undisclosed proportion of the dwellings had been bought under the Right to Buy scheme. Various types of dwellings were included from semi detached houses to towerblock flats. About a third of the houses had had 'capitalised improvement' which involved double glazing and insulation, repaired or replaced roofs, secure front doors provided, garden walls repaired and car runways built.

Another third of the houses were 'partially improved' with replacements made if in bad disrepair, or new single glazing. Car runways but not walls were built. The rest of the housing had only had routine repairs. The respondents were of very low income; nearly half were single. Nearly 60% were not working, half of these being retired.

Capitalised properties were significantly less likely to be damp (although over a third still showed signs of dampness), were least noisy and were the most secure of the council properties (although owner occupied properties were even more secure).

Residents of capitalised properties were the most satisfied with their properties. Inhabitants of capitalised housing in the 45 to 64 age group experienced fewer symptoms, heart problems, circulation problems, high blood pressure and allergies in the previous two weeks. Older people in housing improved at all experienced less anxiety and depression. Children in capitalised housing experienced less diarrhoea, wheezing and persistent coughs. The health data were self reported. However the authors note that although adult health was poor, children's health in the sample was good suggesting that results were not due to reporting bias.

Wells reports a recent study of housing improvement in America. Thirty one women were interviewed before and after moving into improved housing, and 23 participated in a follow up two years later. Housing conditions on a validated scale significantly improved, as did the women's mental health as measured by the Psychiatric Epidemiology Research Instrument. The improvement in mental health was sustained after two years. However, the women helped to build their new abode (through the 'Habitat for Humanity' programme). This may influence the results:

> "Women noted that while helping to build their own houses, they were able to do things they never thought they would be able to do... Such experiences might affect participants' sense of competence or self efficacy and might thereby influence their mental health... Perhaps the social aspects of participation helped Habitat partners to feel more connected with their community –more a part of something. This might also have an influence on their psychological wellbeing or mental health." (Wells 2000:18-19)

Rather than the physical conditions of their homes being important, improvements in mental health in this study may result from improvements in feelings of mastery or social networks. Another issue is that the Habitat programme houses are owner occupied whereas previously the women were renters. Wells suggests that some of the change in mental health could be due to the significance of becoming an owner occupier rather than a renter.

It must be noted, however, that poor conditions are not confined to the public sector. Leather, Macintosh et al. collated figures of houses which are unfit from all tenures for all parts of the United Kingdom. The measure of unfitness they used combined standards from all parts of the United Kingdom. To be fit for human habitation the dwelling should:

> "Be free from serious disrepair
> Be structurally stable
> Be free from dampness prejudicial to the health of the occupants
> Have satisfactory facilities for preparing and cooking food
> Have adequate provision for lighting heating and ventilation
> Have an adequate piped water supply
> Have a suitably located WC exclusively for the use of the occupants
> Have a suitably located bath or shower and wash hand basin
> Have an effective drainage system" (Leather, Macintosh et al. 1994:26)

Leather, Macintosh et al. investigated the division of unfit housing by tenure and found that about a fifth of private rented stock was unfit whereas there was little difference between owner occupied and public rented stock at about one twentieth (table 2.3). The total amount needed to update the public rented stock is much less than that of the owner occupied stock because of the larger proportion of owner occupiers. These sorts of data suggest that public renting should not automatically be assumed to be associated with poor housing conditions. However, the standards do not include cold, and only include rising and penetrating damp, not condensation and mould, which may be important discrepancies between social rented and owner occupied housing stock (Morris 1996). Additionally government policy has made conditions in the public rented sector worse: councils lost many of their reliable rent payers through the Right to Buy scheme yet were only allowed to use 25% of the receipts from sales on repairs and renewal (Lowry 1991).

Table 2.3 Percentage of housing unfit by tenure and country

	Owner occupied %	Private rented %	Local Authority & Housing Executive Homes in Northern Ireland %	Housing Association & Scottish Homes %
England (1993)	5.5	20.5	6.9	6.7
Scotland (1993)	3.6	16.5	4.3	3.3
Wales (1988)	7.1	22.3	3.3	NA
Northern Ireland (1993)	8.5	27.5	2.9	2.1
Cost of making fit-1994	£2.8bln	£1.8bln	£0.6bln	£0.2bln

Based on figures 3.2 and 3.6 (Leather, Macintosh et al. 1994)

Another problem is that it is difficult for tenants to get poor conditions remedied. In law tenants themselves can take action against their landlord; however they may then have to endure stress and the legal proceedings may involve financial outlay. Theoretically the council environmental health department should be able to take action. However, the council would then be taking action against itself as the housing provider, which would be seen as legally incompetent under English and Welsh law, so environmental health departments do not take action. In Scotland this sort of case has never been tested, nevertheless environmental health departments still do not take action. Morris describes the situation as one "in which the gamekeeper and poacher are one and the same" (Morris 1996:16). In future, with more public rented stock transferred to housing associations, this particular problem may be alleviated. This issue is of interest because tenure itself may be the cause of poor housing conditions.

In another study relating tenure and housing conditions, Galster (1983) compared 465 owner occupied and 66 owner absent (rented) single family detached dwellings in Ohio in the mid 1970s. Owner occupiers were more likely to do work than landlords and owner occupiers were less likely to have interior, exterior or structural problems with their homes. Thus the tenure of the housing may influence its condition, which may then influence the health of its occupants. In chapter 3 I consider more closely how tenure itself may be implicated with poor health rather than just through the conditions of the stock.

In summary, improving dwellings has been found to be associated with improved health, although there are few large scale and well designed studies on this topic. Dwellings in a poor state of repair are not confined to the social rented sector. There are several reasons why social rented properties are likely to lapse into a poor state of repair.

Area

The area in which a dwelling is situated may exert an effect on the health of the inhabitants through the general upkeep of the area, crime, friendliness and the amenities and services provided.

In Ellaway and Macintyre's study (1998) they also asked respondents about their neighbourhood. Owner occupiers rated amenities, neighbourliness and satisfaction with the area significantly higher than tenants. Tenants were significantly more likely to report neighbourhood problems, fear of crime and poor reputation than owners. An overall score was provided for assessment of the local area, and owners' scores were significantly more positive than tenants.

In further analysis of the same data, they found that the area in which people lived, predicted diet, smoking and participation in sport after controlling for gender, age, social class and income; this implies that:

> "Characteristics of places (for example the availability of healthy foods, local, and cultural role models in regard to smoking and sports facilities) may be as significant for these health behaviours as the characteristics of people living there." (Ellaway 1996:446)

Ellaway and Macintyre's work suggests that area may be important because some places are more conducive to living a healthy lifestyle, and additionally that features of the area may be associated with anxiety and depression in residents.

In another analysis they compared four neighbourhoods in Glasgow with contrasting tenure distributions. After controlling for sex, age, social class and neighbourhood they found that respondents' overall assessment of the area was related to anxiety, self perceived health compared to others of the same age, and self assessed health, but was not related to depression. Their area measure combined amenities, area

problems, area reputation, neighbourliness, worry about crime and area satisfaction (Sooman and Macintyre 1995).

Cohen, Spear et al. (2000) conducted an ecological study which connected features of areas to rates of gonorrhoea in New Orleans, USA. Areas with poor physical conditions such as broken windows and other kinds of vandalism and abandoned cars reported higher rates of gonorrhoea than other areas. The authors suggest that poor conditions in areas signal that no-one cares, and individuals may thus be more likely to indulge in behaviours which pose serious health risks. They found that in these poor areas there were low rates of home ownership. Thus the physical condition of the area gives rise to certain meanings. Meanings will be given more attention in the next chapter.

Conclusion

This review of the literature on physical characteristics of housing and health suggests that there is evidence that physical aspects of the environments in which people abide, such as damp, do affect health. From this description of physical characteristics of housing we can conclude that:

- Many studies have problems due to self selection, spuriousness and measurement
- Cold, damp and noise are associated with social rented accommodation and poor health
- Improving the general state of property is associated with improved health
- Overcrowding is a complex issue as living alone may also be a problem
- Tenants who are not in charge of their own repairs may have difficulties obtaining them
- Social tenants are more likely to be flat dwellers however it is difficult to separate the health effects of housing design from other factors
- Social renters live in less desirable areas which may also be prejudicial to their health.

To anchor the review I discussed physical aspects mentioned by Ellaway and Macintyre (1998) which differentiated social renters from owner occupiers. However Ellaway and Macintyre focussed on Glasgow where social rented housing

is in a particularly poor physical condition and thus the relationship between housing tenure and physical conditions may not be so strong elsewhere. Nevertheless it does appear that social renters may live in poor physical environments in addition to receiving low incomes.

Past studies, Hunt (1997) argues, suggest that although there is a close relationship between tenure and income, housing quality should not be ignored:

> "This would seem to beg the question of what it is about low income that makes individuals ill. Part of the answer must surely lie in the inability of disadvantaged individuals to gain access to good quality housing."
> (Hunt 1997:169)

Hunt is suggesting that income itself does not affect health; it is what can be done with income that is important. Some of the interactions that Hunt mentions include the fact that people on low incomes have to spend a much higher proportion of their income on heating. This problem is magnified because low income people are less likely to have energy efficient houses and so need more heating. For example to prevent damp, tenants are often told to put their fires on and open their windows which is not energy efficient. Hunt summarises the ironic situation in the following way:

> "The financially worse off, by and large, get the worst housing, sometimes none at all. Thus those who need the most protection get the least"
> (Hunt 1997:169)

Thus Ellaway and Macintyre (1998) suggest that the worst housing may well be in social rented and this worst housing may well make people ill.

In this chapter I have established that tenants, particularly social tenants, tend to be more likely to be ill and die younger than owner occupiers. This relationship is not just due to different income levels: poor physical conditions can make people ill. However there may also be a relationship between the type of house, the area and the meaning given to that area that may be health damaging or promoting; homes may provide psychological resources. Some sorts of homes and areas may provide meanings that are associated with more security than others. The idea that feelings of security may be health promoting and can be derived from homes will be explored in chapter 3.

Chapter 3 Why include ontological security in a study of home ownership and health?

In chapter 2 I discussed the physical characteristics of homes and their links with health. In this chapter I introduce the possibility that there may be psychosocial links between housing and health. Saunders (1990) has suggested that a desire for owner occupied housing as opposed to social rented housing may be due to a need for ontological security, a psychosocial resource. As ontological security has thus been explicitly related to tenure, this concept is the focus of this thesis rather than other psychological issues that have been related to the meaning of the home (such as the meaning of territory). Ontological security is also a useful umbrella concept that embraces many issues, such as privacy and status, within its boundaries.

This chapter has four principal sections. In the first section I discuss what ontological security is by examining various theories and I also consider whether it is likely to be related to health and to the environment (in particular, housing). In the second section I explain how ontological security will be defined and used in this particular study and how it can be divided into three components: protection, autonomy and prestige. In the penultimate section I turn to the debate as to whether ontological security is related to housing tenure rather than housing in general. In the final section I discuss how studies imply that the components of ontological security (protection, autonomy and prestige) may be related to housing tenure.

3.1 Theories of security and their relationship with health and housing

For ontological security to be a component in the pathway between housing tenure and health, it must be a cause of poor health and it must be sensitive to differences in the environment such as housing tenures. The aim of this section is to see whether previous literature implies that ontological security is related to both health and the environment. There are various theories that resemble 'ontological security' that I discuss in this section. Together I call them 'theories of security' and I will use the term 'ontological security' only when the author did so. In this section, I start by

explaining why it is necessary to look beyond literature on 'ontological security' before introducing each theory. Next I discuss whether security does predict health. I then turn to sources of security. Much work on security has focussed on genetics and childrearing as the basis for security. I describe this work briefly before turning to environmental sources of security: a reliable lifestyle and housing.

An introduction to theories of security

Little has been written on 'ontological security' itself making it hard to gauge its usefulness as a concept in helping to explain the mechanism by which housing tenure effects health. Fortunately there are several concepts that are linked to ontological security, which may shed light on its value; these include Tillich's '*courage to be*', Erikson's '*basic trust*', Bowlby's '*attachment security*' and Antonovsky's '*sense of coherence*'. Although Laing first brought the concept of ontological security to people's attention, the concept has been revised and extended by Giddens. In this section I introduce each of these concepts to make the rest of this chapter more comprehensible.

I start by describing Tillich's '*courage to be*' which continues the traditions of theological and philosophical theories on fear and insecurity. Tillich, a German philosopher/theologian, argued that "anxiety of not being able to preserve one's own being... underlies every fear" (Tillich 1952:36). Threats to one's own being included death, meaninglessness and guilt. He believed that anxiety was 'existential' and thus was inescapable throughout life. However a person could manage anxiety through the '*courage to be*' or 'self affirmation'; in normal circumstances humans are aware that there are existential anxieties but affirm their existence *despite* these anxieties.

Erikson, a psychoanalyst, outlined eight stages of life each of which involved challenges. The first challenge, encountered in infancy, is the establishment of '*basic trust*' as opposed to basic mistrust. *Basic trust* enables one to deal with anxieties:

> "[*Basic trust*] forms the basis in the child for a sense of identity which will later combine a sense of being 'all right,' of being oneself, and of becoming what other people trust one will become." (Erikson 1965:224)

Erikson believed *basic trust* was the first building block on the way to becoming a happy adult. Without *basic trust* the child will find the next challenge (autonomy, which Erikson sees as the ability to act independently) more difficult.

Bowlby, like Erikson, also focussed on childhood. He trained as a child psychiatrist and as a psychoanalyst. However his attachment theory also incorporates ideas from "ethology, cybernetics, information processing [and] developmental psychology" (Bretherton 1992:759). Bowlby's main thesis is that an adult who is "healthy, happy and self reliant" (Bowlby 1988:1) would have been securely attached to its main caregiver at a very early age:

> "The pattern of attachment consistent with healthy development is that of secure attachment, in which the individual is confident that his[1] parent (or parent-figure) will be available, responsive and helpful should he encounter adverse or frightening situations. With this assurance he feels bold in his explorations of the world and also competent in dealing with it. This pattern is found to be promoted by a parent, in the early years especially by the mother, being readily available, sensitive to her child's signals and lovingly responsive when he seeks protection and/or comfort and/or assistance."
> (Bowlby 1988:167)

The child who feels that its parents will protect it from threats feels safe enough to explore the world autonomously. Thus Bowlby believed that parents' reactions to their new baby are of extreme importance.

Unlike Erikson and Bowlby, who aimed to explain why some children deviate from normal development, Antonovsky was studying 'salutogenesis,' (the origins of health rather than illness). He aimed to explain why some people survived the Nazi concentration camps while others did not. Antonovsky believed *basic trust* underlies his concept of a *sense of coherence* and built on Erikson's work:

> "Erikson's *basic trust* challenge will be fully and successfully met [when] the infant and child may become persuaded that his or her world, physical and social, can be counted on not to be constantly changing."
> (Antonovsky 1987:95-96)

To Antonovsky the world will feel safe when it is experienced as reliable. He defined a *sense of coherence* as:

[1] Some authors use 'he' rather than 'he or she' either because they were writing before the importance of gender neutrality was recognised or to distinguish the child from the primary care giver, usually a woman.

> "A feeling of confidence that one's internal and external environments are predictable and that there is a high probability that things will work out as well as can reasonably be expected" (Antonovsky 1987:xiii)

Antonovsky suggests that the world can appear unreliable to those without a sense of security; Laing suggests that the self becomes unreliable.

According to Laing, a feeling of ontological insecurity means that a person can never feel secure and connect to other people and is unable to trust even him/herself. According to Laing such a person will not have a sense of:

> "The permanency of things, of the reliability of natural processes, of the substantiality of others... An individual whose experiences may be utterly lacking in any unquestionable self-validating certainties." (Laing 1965:39)

Thus the ontologically insecure person does not perceive people or things to be reliable, resulting in an inability to try and improve the situation. Instead the aim will be to prevent the situation from getting worse:

> "The ontologically insecure person is preoccupied with preserving rather than gratifying himself: the ordinary circumstances of living threaten his low threshold of security." (Laing 1965:42)

Thus such people are concerned with protecting themselves rather than with higher order needs such as status. Rather than calling these feeling of distress 'insecurity,' Laing designates the problem as a lack of 'ontological security'. He explained that he uses the term ontological "because it appears to be the best adverbial or adjectival derivative of being" (Laing 1965:39 footnote). Thus rather than being a transient experience, the lack of security becomes a permanent state.

In these summaries I have attempted to describe the basis of concepts that relate to feelings of security. They originate from different fields (philosophy, child development and psychiatry) although there is considerable overlap. Each discusses how humans make the world meaningful to carry out their daily lives, or in some instances how the world stops being meaningful. In the case of *sense of coherence*, security is a personality characteristic whereas for Tillich, Erikson and Laing, security is perhaps more of a coping skill. So far there is little to link any of the concepts to housing. Parenting and the need for reliability seem of greater importance. Issues of feeling protected (e.g. by the parents), feelings of control and also of self validation, that one is of worth and not about to be swept away are also

present. Although there may be differences in the concepts they have many similarities. Research on any of the concepts can deepen understanding of what security is. Some of these concepts are rooted in health fields and all are linked to health. In the following section I will focus on the relationship between these concepts and health.

Are theories of security related to health?

For ontological security to be a link between housing tenure and health it must predict health. The above concepts relating to security are theoretically linked to health. Academics also gathered empirical evidence particularly regarding attachment theory. I start by looking at theoretical links between theories of security and mental health. I then summarise empirical evidence for a link with mental health before discussing physical health.

All the theories suggest that lack of security is a cause of mental illness. In fact attachment has been declared to be a major contributor to mental health (George and West 1999). Tillich argues:

> "He who does not succeed in taking his anxiety courageously upon himself can succeed in avoiding the extreme situation of despair by escaping into neurosis... neurosis is a way of avoiding non being by avoiding being... he surrenders a part of his potentialities in order to save what is left." (Tillich 1952:62)

My example to illustrate this quotation could be an agoraphobic who is too anxious to leave the house. In the house the agoraphobic feels safe so the anxieties are no longer troublesome but because s/he is unable to conquer fears of leaving the house s/he is unable to reach his/her full potential.

Antonovsky suggests that stressors (causing fear) may not be distributed equally: those in low social classes may encounter more stressors. This could lead to a weak *sense of coherence* which may be an explanation for higher levels of schizophrenia in low social classes. Thus status in society may provide a *sense of coherence.*

Erikson, like Tillich, saw lack of security as leading to a withdrawal from the world, which is a characteristic of mental illness.

> "In adults the impairment of *basic trust* is expressed in a basic mistrust. It characterises individuals who withdraw into themselves... these ways... are more strikingly represented by individuals who regress into psychotic states." (Erikson 1980:58)

Without *basic trust* the adult cannot function properly which causes mental illness. Laing suggests that this withdrawal is due to feelings of meaninglessness rather than just fear. Laing believed that "behaviour was deemed mad because it broke social rules" (Ussher 1991:131) and was thus socially constructed. The person labelled as mad saw that a rule was meaningless and thus did not follow it. Laing wrote:

> "In the context of our present pervasive madness that we call normality, sanity, freedom, all our frames of reference are ambiguous and equivocal." (Laing 1965:11)

The schizophrenic's view is that much of everyday life is meaningless. In his case studies, Laing illustrates that such thoughts of being an actor in life rather than being one's real self could precede the descent into psychosis as feelings of insecurity become overwhelming.

Antonovsky also suggested meaninglessness could be linked to early mortality. He argued that failing to comfort children was a cause of unhappiness as well as physical problems:

> [For some children] the only things that are predictable are hunger, discomfort and pain, never adequately assuaged by being held closely and a vicious cycle of apathy, withdrawal, failure to thrive, shrinking and death [ensues]. (Antonovsky 1987:95)

If a child sees the world as a negative place s/he is unlikely to reach his/her potential and may even give up altogether and die. An extreme example, I would suggest, appeared on our television screens more recently in documentaries about Romanian and Chinese orphanages where children are left in cots for long periods with no stimulation or care from those looking after them (e.g. Wylie 1997). The world of these children is not coherent because there is no adult to make it meaningful for them; in fact *sense of coherence* may be better described as a sense of understanding.

So far I have discussed why security might theoretically be linked to mental health: a stressful and or a meaningless life threatens security which leads to a withdrawal from the world and or ignoring social rules which then leads to mental illness. I now discuss empirical evidence.

The 29 item 7 point likert scale designed to measure *sense of coherence* (Antonovsky 1987:189-194) has been found to predict symptoms, quality of life and psychosocial health (Cederblad and Hansson 1996) and global wellbeing (Smits, Deeg et al. 1995). When evaluating attachment theory, Manicavasagar, Silove et al. (1998), found that separation anxiety before age 18 could predict later anxiety disorders particularly panic disorders and agoraphobia. The results of these studies do suggest that *sense of coherence* could have implications for wellbeing.

However measures of security have been difficult to differentiate from other psychosocial and psychological concepts such as mastery and social inadequacy (Smits, Deeg et al. 1995) and negative affect (Kravetz, Drory et al. 1993). Furthermore, there are problems differentiating measures of security from measures of mental health. The *sense of coherence* scale, for example, could also be answered negatively by a depressed person with items such as 'you anticipate that your personal life in the future will be...' with answers ranging from 'full of meaning and purpose' to 'totally without meaning or purpose.' Other items are less reflective of depression but may be more about anxiety 'Do you have the feeling that you are in an unfamiliar situation and don't know what to do' with responses ranging from 'very seldom/never' to 'very often.' Thus there could be confusion between the predictor variable, *sense of coherence*, and the outcome variable, mental health.

Thus in theory these security concepts should predict mental health. Empirical work has suggested links between measures of security and mental health. However there have been problems differentiating theories of security from other psychological concepts and from mental health itself.

There is evidence for mechanisms relating attachment to physical health through effects on the immune system (Cox and MacKay 1982; Irwin, Daniels et al. 1986). Other research suggests that physiological responses to deal with stressful situations are disrupted in insecure children leading to elevated cortisol (Spangler and Grossmann 1993; Stevenson-Hinde and Marshall 1999). Lack of secure attachment behaviour may make an individual more vulnerable to stressful life events for three reasons:

> "1. By giving rise to a non specific vulnerability to stress which predisposes to the onset of symptoms
> 2. By influencing the individual's ability to establish and utilise social support networks, thereby affecting the availability of support at times of stress;
> 3. By influencing the way in which the individual reacts to life events, and the way in which he or she appraises them." (West, Livesley et al. 1986a:206)

Alternatively it could be argued that stressful life events disrupt social relationships rather than problems with social relationships being the underlying cause of difficulties with stressful life events (McFarlane 1986). However it is likely that the stressful life events and social relationships interact (West, Livesley et al. 1986b).

Stress has been linked to increased heart rate, blood pressure and natural killer cells (relevant for immune function), alterations in DNA repair mechanisms and slower wound healing; these factors have implications for heart disease, cancer, multiple sclerosis and viral infections (Benschop, Geenen et al. 1998; Marucha, Kiecolt-Glaser et al. 1998; Kiecolt-Glaser and Glaser 1999). However not all studies have found a significant relationship between stress and health (Davey Smith 1999).

Researchers have attempted to link attachment to poor physical health such as heart disease through specific psychological mechanisms. Gallo and Smith (1999) found that securely attached adults with affiliative relations with their parents were less hostile and had higher social support. Hostility and low social support have both been seen as risk factors for cardiovascular disease (Gallo and Smith 1999) although this has been contested (Hemingway and Marmot 1999a; Petticrew, Gilbody et al. 1999; Hemingway and Marmot 1999b).

There are thus some indications that *attachment security* could predict physical health. Fonagy discusses the link between *attachment security* and physical health:

> "It may be argued that insecure individuals are psychophysiologically vulnerable. Although further evidence will be needed current studies point to inherent limits upon the insecure individual's ability to respond appropriately to stress. In particular, they may experience specific problems in modulating arousal and the recovery from physical and psychological disorder."
> (Fonagy 1996:141-142)

Thus there are plausible mechanisms through which lack of attachment may increase the chances of serious physical illness, which may then effect mortality rates:

through stress, through the immune system, through lack of social support and through increasing susceptibility to heart disease.

The theories of security described above suggest that a stressful life or a meaningless life may lead to a pervasive sense of insecurity, linked to a withdrawal from the world - a characteristic of mental illness. Mental illness can be linked to mortality through an increased risk of suicide. Additionally a lack of security may be linked to experiencing more stress in challenging situations. High stress has been linked to physical illness. However some issues about the utility of security have been raised in this section. It is unclear how different security is from other psychological measures such as negative affect, and from measures of mental health such as depression.

Is security fixed in childhood?

I have established above that security has been successfully used to predict health. Now I turn to the issue of what predicts security. For housing to be capable of bestowing security, other possible contenders, such as genetics and parenting, must not provide the complete explanation for security. I first consider the genetic influence. If security is exclusively genetically determined then any other environmental influence can be dismissed.

Is security congenital?

Some authors have argued that the ability to become a well adjusted, secure adult is determined before birth. Some researchers have attempted to address the question of nature versus nurture: Nachmias, Gunnar et al. (1996) studied attachment behaviour (which they suggested derived from nurture) and inhibited temperament (which they proposed derived from nature) in 77 children aged 18 months. Only insecurely attached inhibited children had increased levels of salivary cortisol in response to novel events. Such children's mothers displayed more intrusive behaviour. Elevated cortisol may be predictive of an inability to cope with stress in later life. This suggests that the mother's behaviour (nurture), rather than simply genetics (nature), is causing physiological effects. However they note that attachment behaviour and inhibited temperament could both be biologically determined. Bowlby himself argues that with adequate care even difficult babies can be securely attached (Bowlby 1988).

In the following case study Laing suggests that the child had congenital difficulties with coping with life. However these problems with ontological security were exacerbated by the mother's behaviour:

> "[Julie's mother reported that] Julie was always a 'good' child... she never cried really for her feeds... This baby was born with its organism so formed that instinctual need and need gratification did not come easily to it.... along with the mother's total failure to realise; this can be noted as one of the recurrent themes in the early beginnings of the relation of mother to schizophrenic child." (Laing 1965:183-184)

Therefore there is recognition that genetics may have an influence but other influences can supersede genetics.

Child rearing

Many security theorists suggest that parenting is of vital importance for the development of a long term sense of security. Attachment theory, in particular, was based on whether an infant is securely attached to its caregiver. Although there seems to be a clear difference between those who make secure attachments and others, there is more ambiguity about the various forms of insecure attachment (for example George and West 1999; Ainsworth 1985; Nachmias, Gunnar et al. 1996). The effects of early attachment appear to resonate throughout life although the details of this are not yet clear (Sheiner 1990). Infants who cannot feel true attachment to their main caregiver have been found to have difficulty with relationships as adults. In a meta analysis of 'the adult attachment interview', mothers of securely attached children were more likely to report childhoods where they were also securely attached (van Ijzendoorn 1995).

There is some evidence from longitudinal studies that secure attachment is not fixed in infancy, as changes have been found up to early adulthood. Negative life changes such as death, divorce, life threatening illness or abuse in the family as well as maternal depression and family functioning in early adolescence have been found to precipitate change (Waters, Merrick et al. 2000; Weinfield, Sroufe et al. 2000).

Changes in attachment over the life course may have implications for health. Teenage and adult attachment predict mental health after controlling for infant

attachment in retrospective and longitudinal studies (Sroufe, Carlson et al. 1999; Carnelly, Pietromonaco et al. 1994).

Although Erikson and Antonovsky both discussed the importance of caregiving in infancy, neither believed that this was the only important life stage. Erikson believed that his eight life stages were interrelated and not "secured once and for all at a given state" (Erikson 1965:246). Similarly, although Antonovsky conceptualised a *sense of coherence* as an enduring trait he did not suggest that it was totally independent of the environment: "To say that the *sense of coherence* is stable, enduring and pervasive does not however compel us to say that it is immutable." (Antonovsky 1979:186). He suggested that acute events and long term stressors may alter one's *sense of coherence*, although reaction to such events will be based upon one's *sense of coherence*.

Laing's explanations for why some people see the world as full of empty meaningless rituals, and thus become ontologically insecure and lapse into mental illness, drew heavily from childhood experiences. In one case:

> "Mrs D., a woman of forty... said she was frightened of everything... a feeling of bafflement and bewilderment which she related to that nothing she did had ever seemed to please her parents." (Laing 1965:59)

Here Laing is looking to childhood relationships rather than anything that happened in Mrs D's adult life. To Laing, childhood experience was fundamental in establishing ontological security. However Giddens who later took up the idea of ontological security did not focus on childhood.

I have shown above how childhood experience with caregivers is a bedrock of most of the security theories. However security was not usually seen to be immutable after childhood. Other contributions to security will be discussed next.

Security and reliability

Rather than the primary caretaker being of vital importance, it may be that routine and reliability throughout life helps establish and maintain security. Reliability may have implications for housing in that some tenures may produce a more reliable environment than others.

Giddens, a social theorist, has taken up and expanded Laing's concept of ontological security. Laing defined ontological security as a psychological resource developed in childhood. Giddens, however, widened the concept to allow it to continue to fluctuate in adults as well. In 1984 Giddens defined ontological security as:

> "Confidence or trust that the natural and social worlds are as they appear to be, including the basic existential parameters of self and social identity." (Giddens 1984:375)

Reliability is central to this definition and also to Giddens' lightly revised definition provided in 1991:

> "A sense of continuity and order in events, including those not directly within the perceptual environment of the individual." (Giddens 1991:243)

Giddens believes that people deal with the threat to ontological security through establishing routines so that events become predictable. He suggests that it is the routines between babies and their caretakers that produce ontological security. Later routines are based in the ordinary conventions of everyday life such as in greetings when passing people in the street. For example in 'Forms of talk' Goffman (1981) shows how people use conventions in conversation to prevent themselves being seen as rude. If people do what is expected then the world seems safer. Giddens concludes:

> "Rituals of trust and tact in day to day life... concern the basic substance of everyday interaction – through control of bodily gesture, the face and the gaze and the use of language – they touch on the most basic aspects of ontological security." (Giddens 1991:47)

The results of a person's actions will be predictable from past experience so fear of the unknown is reduced. This occurs through carrying out rituals that Laing suggests would be deemed empty by a schizophrenic. These 'empty' rituals may help sustain a sense of predictability and order.

Tillich believed that change is often experienced as threatening because it threatens security:

> "The dangers connected with the change, the unknown character of things to come... make the average man a fanatical defender of the established order. He defends it as compulsorily as the neurotic defends the castle of his imaginary world. He loses his comparative openness to reality." (Tillich 1952:65)

The threat of change may distort a person's view of reality. To Antonovsky changes are only threatening without a *sense of coherence*. He also noted that there is increased mortality after events which may be viewed as shaking a person's understanding of the world, such as being a prisoner of war, losing a long term relationship or forced migration (Antonovsky 1979).

Although highly routinised lives would appear to result in higher security, I believe it is wrong to overplay the aspect of routine. In the interviews Antonovsky used to develop his concept there seems very little to separate *sense of coherence* from straightforward optimism or pessimism. Those who were defined as having a high *sense of coherence* appear to be those who take an optimistic view of life events (Box 3.1).

Box 3.1 Optimistic views from interviewees with a high *sense of coherence*

- "It was a collective event, not aimed at me personally"
- "I love my work, the job is a challenge"
- "I laugh a great deal; laugh with everyone"
- "What I can do, I do; what I can't well... you have to take life as it comes"

(Antonovsky 1987:67-71)

Respondents who were said to have a low *sense of coherence* were very negative about events in their lives (Box 3.2).

Box 3.2 Pessimistic views from interviewees with a low *sense of coherence*

- "I'm a sick woman, I always suffered from something"
- "Nothing can be done in a case like mine"
- "Whenever I tried to work I was told I just mess things up"
- "I have to stand my ground, be like a thousand animals, not let anyone harm me"

(Antonovsky 1987:72-74)

Even these short quotes do not suggest to me that the respondents with a low *sense of coherence* do not have any understanding of what is happening to them; it appears they have a coherent explanation for their problems. The major difference between

the two groups is that the first group interpret events as positively as possible whereas the second group take a negative viewpoint. Here I would argue that predictability, coherence and routine are not sufficient for security. A sense of insecurity must also involve a feeling that a person cannot cope with the change through a lack of control and a lack of self worth.

These theorists thus suggest that during infancy a sense of security can be established and that later security can be maintained by a life where events are reliable. People work to prevent changes which threaten security. Such threats can precipitate a decline into mental illness. However how events are interpreted is crucial for their effect on security. Additionally continuously occurring negative events are unlikely to promote a sense of security.

Security and housing

In this section I discuss the argument that housing can provide a refuge in an increasingly unreliable world. I discuss whether the home can be used to bolster the fragile self, particularly through place attachment. I also describe a study that considered the link between *sense of coherence* and housing as predictors of health. I introduce the literature on ontological security and the home. I then consider cultural influences that have led to owner occupation being seen as a source of security in today's world and arguments that refute this.

With all the threats and challenges from society the self may feel threatened. The home may represent a place of stability in which the self can be protected though being grounded in the environment. Cooper (1974) in her paper 'The house as symbol of self' has linked deep feelings about the self to the home. Her description of the self bears a resemblance to Laing's work, but unlike Laing, Cooper's aim was to emphasise the importance of the environment. One perspective that people with alternative worldviews, such as schizophrenics, may hold is that humans are intimately connected with the environment:

> "The so called mentally ill may in fact be more closely in touch with these lost connections between the self and environment than any of us realise... perhaps it is the so called normal adult who having been socialised to regard self and environment as separate and totally different is most out of touch with the essential reality of oneness with the environment which small children,

> schizophrenics, preliterate people and adherents of certain Eastern religions understand completely... My contention is that in thinking dreaming or fantasising about self and house as somehow being inextricably intertwined as being at some level one and the same thing man... is ridding himself of the delusion of the separation of man from the environment."
> (Cooper 1974:143-144)

Cooper believes that houses are part of the environment, and that they must have strong effects on people because of familiarity. She believes that the house becomes part of the self. Thus a house can be used to bolster people's feelings of self:

> "For most people the self is a fragile and vulnerable entity... we wish therefore to envelop ourselves in a symbol-for-self which is familiar, solid, inviolate, unchanging." (Cooper 1974:144)

Conversely challenges to our housing, Cooper implies, are interpreted as challenges to the self. Thus gypsies and others who do not follow housing norms are experienced as threatening. Threats to the concept of home may ultimately become threats to the self. Laing discussed the fragility of the self. He suggests that people become schizophrenic because they lose their sense of self. Cooper is suggesting that having a home that one can alter to reflect one's personality strengthens the self. These ideas may provide an explanation for why people like to feel connected to a dwelling that they can then call 'home'. Gurney (1996) and Karjalainen (1993) provide further discussion on the importance of a 'home.' Karjalainen, for example, suggests that "a home [has] properties accessible only to the people who made it their home... - sentiments, emotions, feelings of security, interpersonal relations" (Karjalainen; 1993:70). Unfortunately, there is not enough space to go further into this literature here.

Bowlby mentions the home only in passing, when discussing a study by Robson and Kumar (1980) on the beginnings of attachment after birth:

> "Usually there comes a moment when she feels the baby is her very own. For some it comes early; perhaps when she first holds him or he first looks into her eyes. For a large minority of primaparae who are delivered in hospital, however, it may be delayed for up to a week often until they are home again."
> (Bowlby 1988:6-7)

For Bowlby and many attachment theorists the home and environment were not seen as a central issue rather personal relationships were of primary importance. However others have linked attachment theory to the home.

Although psychoanalysts were initially hostile to Bowlby's work, with its emphasis on observed behaviour rather than the fantasy world of the patient (Bretherton 1992), by the 1990s many had accepted the principles of attachment theory. Hill uses attachment theory in the basis of his article 'At home in the world'. Hill's paper is interesting in that he discusses the links between attachment theory and the notion of home. In part of his paper he discusses home as a concrete place: "As humans we need to attach ourselves to people and places so that we may feel at home in the world" (Hill 1996:578). Hill found the concept of home to be very significant to his analysands. One patient substituted attachment to her "unavailable parents to the beautiful house and garden of her childhood" (Hill 1996:589). It appeared that for this patient attachment to people was interchangeable with attachment to places.

Possible corroboration for Hill's assertions can be found in a study of children who moved after their parents divorce (Stirtzinger and Cholvat 1991). Those who were securely attached to their previous home were more able to cope with the divorce. The authors suggest that the previous home had become somewhere idealised, a place where they could store memories of a previous existence. However children of divorcees were more likely to move to houses in less good condition so their nostalgia could be to do with the previously better conditions.

Some people's inability to attach themselves to other people may affect their ability to find stable housing. Milburn and D'Ercole (1991) use attachment theory to explain homelessness. Some people have such fragile relationships, due to insecure attachment, that they are unable to receive help when in housing need.

Some researchers have made place attachment the subject of their research. Theories of place attachment have not however, developed only from Bowlby's work on attachment. Low and Altman (1992) suggest that its roots are in phenomenological work by Bachelard and Eliade in the late 1950s and early 1960s. Later researchers may have incorporated Bowlby's work because it makes the same points. Hay explored the sense of place in the Banks Peninsula in New Zealand. In a large scale study (1987-1996) he interviewed 270 residents and 80 out migrants and surveyed tourists and local children. He concluded that:

> "A sense of place if allowed to fully develop, can provide feelings of security, belonging and stability similar to the feelings that arise from a fully developed pair bond" (Hay 1998:25)

Hay made the link between place and social relations as follows: "sense of place develops in parallel to a settled feeling" (Hay 1998:19). To Hay attachment to the environment was enmeshed with attachment to the inhabitants there.

Places may have a powerful effect on health: among old or frail people, moving home may well precipitate a negative health change (Cooper-Marcus 1992). Rubenstein and Parmalee (1992) believe that attachment to place may be especially crucial for the wellbeing of older people because it reminds them of their past lives. Familiarity may mean that physical and sensory limitations are less restrictive allowing more control to be maintained. Attachment to the home appears to be important for wellbeing from childhood (see Stirtzinger and Cholvats study) to old age (as discussed by Cooper-Marcus and Rubenstein and Parmalee).

Although Bowlby was primarily interested in attachment to other people, other attachment researchers have seen the home as a source of attachment. Separating attachment to the physical home from the people living there may be difficult however. Where people's attachment breaks down they may be at a greater risk of homelessness.

The *sense of coherence* scale has been applied in a study on the role of housing and health (Dunn and Hayes 2000). The study was aiming to explore pathways through which housing can produce inequalities in health. The study consisted of a questionnaire survey mailed to respondents in two localities in Vancouver.

Various housing and neighbourhood characteristics, including tenure, were measured. They examined the relation between housing and health in context as they also included measures of job stress, stressful life events, social support, household characteristics and individual attributes. *Sense of coherence* was used as a measure of coping skills. They did not see tenure as relating specifically to security: "home ownership could imply an increased sense of control and prestige as well as greater wealth" (Dunn and Hayes 2000:569) although having a sense of control and

prestige may be related to a sense of security. Additionally there were several other measures relating to security in the questionnaire: job security, safety and security in the home, neighbourhood housing demands and control, and housing identity and meaning.

There were four measures of health: self rated health (A) (excellent/very good/good vs. fair/poor) self rated health (B) (excellent/very good vs. good /fair/poor), health satisfaction and Mental Health Indicator (MHI) (case vs. non case). Logistic regression was conducted with each of the four health indicators as dependent variables. The Mental Health Indicator did not produce a good model according to the ρ^2 statistic. Another model was substituted predicting 'feeling constantly under stress' which was closely related to the Mental Health Indicator score.

Sense of coherence was a significant predictor of health in all models except self rated health (A). In bivariate analysis tenure was related to all health measures. In multivariate analysis tenure was only a significant predictor of health satisfaction. Table 3.1 shows the other housing characteristics that were significant predictors of health. Privacy appears to be a key attribute, with aspects such as space satisfaction, crowding and traffic being indicators of poor health. Pride appeared once as did housework and affordability. Respondents with security concerns (being worried about having to move and having a lack of a feeling of belonging) tended to be more stressed. Those with good neighbourly relations tended to be less stressed; good neighbourly relations may be a source of security from people rather than objects.

The findings of this study point to feelings of security from housing as being important for health, especially mental health. However, these findings should be treated with caution. This study is cross sectional, and it is not possible to tell whether these feelings of insecurity from the home affect mental health through a global *sense of coherence* or if the *sense of coherence* is entirely separate. A response rate of only about 9% was obtained. (The authors argue that because they were looking at "substantive relations" (Dunn and Hayes 2000:571) rather than statistical generalisations about the population, the non response was not a major problem). Possibly due to sample size, the authors have not looked at interactions or

whether sex differences are important (housework may not have the same significance for men as for women). All measures were self reported, so the results could be due to a negative affectivity bias. Tenure was not the focus of this study, thus it is not possible to tell from the results which variables result in changes in the importance of tenure as a predictor.

Table 3.1 Housing characteristics predicting health in the Vancouver Study

Self rated health (A)	Self rated health (B)	Health Satisfaction	Constantly under stress
Dwelling interior layout	Police protection of neighbourhood	Crowding	Dwelling interior layout
Space satisfaction	Proud of dwelling	Space satisfaction	Overall dwelling satisfaction
Frequency talk with neighbours	Affordability of housing	Strain of housework	Frequency talk with neighbours
			Worry forced to move
			Feel I belong in this neighbourhood
			Traffic in neighbourhood

Based on tables 6,7,8 and 10 (Dunn and Hayes 2000)

Saunders has gone further in his arguments; rather than housing in general providing security, he suggests some tenures provide more ontological security than others. He argues that home ownership provides more ontological security than a rented home. He suggests "A home of one's own offers a physical (hence spatially rooted) and permanent (hence temporally rooted) location in the world" (Saunders 1990:293). He believes that owning a home is an answer to threats to ontological security which are outlined by Giddens; these threats cause "a sense of rootlessness and meaningless[ness] in modern life." (Saunders 1990:293). An owned home which is under the household's rather than the landlord's control provides an oasis of security in an increasingly unpredictable world (I discuss and evaluate Saunders work in more detail in section 3.3).

People may see home ownership as an answer to insecurity because of the type of society we live in today. Giddens sees life in high modernity (i.e. today) as challenging to ontological security, because the big belief structures such as religion or communism have largely broken down. In traditional societies, it was not the

case that ontological security was not an issue; it was that there was an answer to the problem of ontological insecurity, which could be resolved through religious belief. In a less secular age more people could turn to religion as a comfort than today. In high modernity no one else can be drawn upon as an infallible expert:

> "Modernity... breaks down the protective framework of the small community and of tradition replacing these with much larger impersonal organisations [yet] high modernity is characterised by widespread scepticism... with the recognition that science and technology are double edged, creating new parameters of risk and danger as well as offering beneficent possibilities to human kind." (Giddens 1991:27-33)

Therefore advice has to be evaluated rather than uncritically accepted. We have the freedom to make decisions for ourselves rather than relying on religious or community leaders to decide what is best for us. Giddens suggests these new demands have resulted in the rise of counselling and of disorders such as anorexia. Similarly, Antonovsky suggests that the choices can be "so bewildering that they result in a sense of paralysis rather than control" (Antonovsky 1979:156). Further issues to do with the new freedoms are discussed by Beck (1992). People feel they can no longer trust others to provide them with the best deal, for example in housing.

However, people may also have less faith in themselves that they will be able to sustain owner occupation. Mo Mowlam suggests that the need for security is why the new opportunities promised by Conservatives have instead left many lost and insecure:

> "There is undoubtedly a widespread sense of insecurity. There is increasing uncertainty about jobs, housing, education and old age... one moment you have a home to pass on to your children, the next it has all disappeared in fees for residential care in your old age... *many now are coming to realise that freedom with a high degree of uncertainty feels less like freedom and more like repression*... at the heart of the problem is people's lack of a sense of belonging." (Mowlam 1996:22-26) [emphasis added]

A society where failure is a greater threat to one's lifestyle and life chances may be a society that lacks security. The insecurity in the more market orientated economies is not good for health:

> "Damage to physical and mental health will be widespread in such societies as a consequence of the lack of basic economic security... One of the richest societies in the world, the US, nevertheless has high levels of infant mortality... and the highest rate of incarceration of virtually any nation,

> basically because of the insecurity to which it continually exposes its citizens" (Rustin 1996:225-226)

The surrounding milieu appears likely to influence pervasive feelings of security. Some ideologies and cultures are likely to provide more security than others. Today's society, sometimes termed post or high modernity, appears to provide less security, with the decline in church attendance, globalisation and the growing influence of the market. Thus owners as well as renters may be suffering.

Saunders used the concept of ontological security to justify Conservative policy in the UK. Saunders' argument is that we cannot trust any person or religion or government, so we must all take control and buy our own homes because that will be our only security against the chaotic nature of our lives. New Left politicians, however, have taken up attachment theory, arguing that the widening gap between rich and poor (which has perhaps been encouraged by the Right to Buy scheme and residualisation of council housing) is responsible for increased insecurity. Security was one of the reasons for building public housing originally, according to Bevan who maintained that "you can make your home the base for your adventures but it is absurd to make the base itself an adventure" (Bevan 1952:36). To Bevan, a socialist, social rented housing was a way of making sure that people had a secure base.

It is interesting to contrast Bevan's ideas with those of New Left thinkers in the mid 1990s. Pound argues that increased home ownership has left only the poorest stock in public ownership:

> "The expansion in the number of owner-occupiers during the 1980s and the consequent improvement in living conditions for many middle-income families was not reflected in a similar improvement for low income families, who continue to live in multi-occupied properties or high-rise flats which are often cold, damp, mouldy and difficult to heat." (Pound 1996:66)

This has meant less good places to which one could become attached and an increase in problems in creating conditions in which children can be brought up to be securely attached. However other writers in the same volume argue more for the introduction of policies which make home ownership easier to sustain throughout life (see quotation from Mo Mowlam earlier), than for a return to more council housing. Insecurity has thus been used to bolster arguments by both the right and the left. This suggests that more research is needed.

Besides tenure possibly providing security, because owner occupation may provide more control and protection to the inhabitant, the status differences between owners and renters in today's society may also be important. Antonovsky argues that those with a strong *sense of coherence* tend not to be at the bottom in the social structure and so not at the mercy of other people (Antonovsky 1979). In a similar vein, work on attachment theory suggests that when the mother is in an environment where she feels secure then she may be more likely to be able to feel attached to her child. In a cross cultural comparison of studies on infant attachment there were large differences between countries but samples from deprived areas had fewer securely attached children (van Ijzendoorn and Kroonenberg 1988). In summing up the evidence on attachment behaviour and socio-economic circumstances, Fonagy suggests that:

> "Patterns of attachment are determined by parental behaviour... the known determinants of attachment are likely to be currently unevenly distributed across social groups, with children born in the most disadvantaged environments receiving the lowest quality of parenting and manifesting the highest rates of insecure patterns of attachment." (Fonagy 1996:140).

It appears that there are likely to be strong correlations between measures of socio-economic status and secure attachment. However low social status is likely to be more important for some cultures than others.

To sum up the last section: security is a deep facet of the self. Cooper has argued that housing is also of great psychological importance. Work by place attachment theorists and by Dunn and Hayes on *sense of coherence*, corroborates the idea that housing may be related to feelings of security in addition to genetic factors, childhood caregivers, and reliability. Saunders introduced the idea that owned housing provides more ontological security than renting. This argument reflected the growing lack of trust in government and religious institutions. However others have argued that it is better to change society so that people trust landlords and that owner occupation can also be insecure in a generally insecure society. Social renters may also lack ontological security due to their low status and powerlessness which create insecurity.

Discussion of the theories of security

I now make some conclusions across the theories of security. I note the strengths of the theories in general, elaborate on the relationship between security and control and note some of the weaknesses of these theories.

In this chapter several approaches to the concept of a long term trait of (in)security have been outlined: Tillich's '*courage to be*', Antonovsky's '*sense of coherence*', Bowlby and Ainsworth's 'attachment theory' and Laing's 'ontological security' with further development by Giddens. Some common themes have emerged from the concepts:

1. People can feel secure when near familiar people, places and objects and when doing familiar things.
2. Insecurity is linked to poor health (mental perhaps more than physical) and reduced longevity.
3. Conditions of early childhood have a substantial effect on later insecurity.
4. The society a person lives in makes a contribution to insecurity, as does a person's status in that society.
5. Feeling that there are safeguards and protection are important for security, whether that protection be in the presence of a responsive caregiver, a deity or the comforting routines of everyday life and a familiar environment and people within it.
6. Control and autonomy are important to feelings of security.

Of course the issue of control is not just studied by insecurity theorists. Much work has been done on the importance of control in everyday life, for example by Karasek in Sweden. Karasek and others found coronary heart disease was high where workers had little control over their work (Alfredsson, Karasek et al. 1982). They found that jobs with high demands and low control were particularly related to heart disease. In Britain, lack of control over work has also been found to predict sickness absence and heart disease in civil servants in the Whitehall study (Marmot, Siegrist et al. 1999). Although control over events is important for security, control is only part of the story. Work on attachment theory has suggested that children only begin to explore when the child feels it is sufficiently safe to do so. In a review of

perceptions of control in vulnerable populations, Thompson and Spacapan noted that control has a positive impact on:

> "Emotional wellbeing, successful coping with stress, good physiological and health outcomes , desired behaviour changes and improved performance" (Thompson and Spacapan 1991:2).

However some people in vulnerable populations may prefer "passive indirect ways of exerting influence on a situation" (Thompson and Spacapan 1991:9). Examples are aligning oneself with someone who is powerful or adjusting one's interpretation so to be acceptable. Such people may not desire control and providing control to these people might not have beneficial effects. Antonovsky also argued that everyone having complete control over their lives actually would mean no overall control with limitless choices and eventually anarchy (see earlier).

There are also some general issues about insecurity which have been brought up in the preceding review:

1. How different is insecurity from depression and anxiety and are any such differences important?
2. What are the contributions to security of genetics, carers in infancy, the physical environment and wider society?
3. The link between insecurity and physical health is not clearly established and may depend on a relationship between stress and health which has also not been clearly established
4. Is security a buffer against ill health or is insecurity a cause of ill health?

In this section I have explored various ways that researchers have attempted to address the issue of insecurity. Security seems to be linked to health. It does not appear to be just an immutable personality trait or something that becomes fixed after early infancy. There are arguments that security is affected by the dwelling a person inhabits, in addition to the people they encounter and wider societal norms and conditions. Thus far security appears to be a plausible candidate for inclusion for a study of housing and health. As yet I have not discussed the evidence for a relationship between security and housing tenure. Before doing so I define how security will be used for the purposes of this study.

3.2 How is ontological security defined for the purposes of this study?

In this section I begin by explaining why I chose to use the term 'ontological security' over other terms used in theories of security. I then provide a working definition of security. At this point I explain how I broke down the concept to make it easier to measure into three components. Finally I suggest that these components are already present in housing research.

In this study it is necessary to decide what to call this trait of insecurity. The term '*sense of coherence*' is perhaps unsatisfactory because the world can be understandable and yet be very unsafe if one is at the bottom of the system. The problem with using 'attachment' is that this is associated with large body of work initiated by Bowlby leaving the other influences forgotten. Additionally, attachment theory is very closely connected with early infancy whereas ontological security is less specific. I thus prefer the term 'ontological security'. Furthermore the word 'ontological' implies something deeper and more profound than just feeling safe; it suggests that this security is the very core of one's being and the basis for other actions. Therefore the term 'ontological security' is preferred as a term for a fairly stable sense of security which may be affected by housing and may itself affect health. It also links well into the tradition of ontological security and housing tenure started by Saunders.

There have been various definitions of ontological security in the past. For the purposes of this study I define ontological security as:

"A long term tendency to believe that things are reliable and secure as opposed to threatening."

To look more closely at the effect housing tenure might have on ontological security I propose to break it down into three interlinked parts: protection, autonomy and prestige. The idea of protection is something that was present in the work of Antonovsky, Erikson, Bowlby and Laing. The caregiver comforts and protects the child and so reassures the child that the world is a safe place to be. Later on people see home as a place where they are protected from threats in the outside world.

Ontological security is enhanced when the carer or the home is reliable – when the carer responds consistently and when the home becomes more permanent rather than a quick succession of different places or is subject to attack by vandals and burglars.

The second component is autonomy which is perhaps more debatable because it means incorporating Erikson's second stage of autonomy as well as *basic trust.* Bowlby suggests that freedom to explore occurs after attachment is established. However Giddens sees autonomy and protection as very closely linked and both needed at once.

> Trust is in a certain sense creative, because it entails a commitment that is a 'leap into the unknown.' [and] is also... to face the possibility of loss... the establishing of *basic trust* is a condition of the elaboration of self identity. (Giddens 1991:41)

Giddens discusses how development of a personality or self identity occurs once fear of consequences of a mistake reduces. Self identity develops when there is a sufficient feeling of invulnerability for a person to exercise autonomy. Giddens suggests that for a person to trust the other they must already have their own identity or autonomy because they have to cope with the possibility that they might be wrong. Tillich also believed for a person to cope with anxiety they must be in control of it by being able to incorporate it into their identity without it overwhelming them. One way in which identity could be created is through identification with place, or where a person feels 'at home'. Autonomy could involve the ability to determine what happens within the home, when to move on, how the home is decorated and when repairs take place.

The third component of ontological security is prestige, which is less openly discussed by the writers but is implicit in much of the work. Giddens discusses the importance of being able to make positive social comparisons with others in order to feel safe and in control:

> "Sustaining feelings of pride has effects which go further than simply protecting or enhancing self identity, because of the intrinsic relations between the coherence of the self, its relations to others and the sense of ontological security more generally." (Giddens 1991:66)

Ontological security, Giddens suggests, can only be maintained when the self is viewed positively in regard to others. To feel safe one needs to be of sufficient

status to be seen a priority to others who can provide aid. Laing discusses the case of 'Peter,' someone with schizoid manifestations; as a boy, Peter had been ignored and belittled by his parents. His father:

> "Tended to be gruff, to pick on faults, occasionally thrash him for no good reason and to belittle him with such remarks as, 'Useless Eustace', 'You're just a big lump of dough.'" (Laing 1965:121).

Laing believed that this was connected to Peter's later sense of worthlessness. In attachment theory there are similar suggestions that children less highly regarded by their parents will become less securely attached (Bowlby 1988).

Antonovsky believed low social class was linked to a weak *sense of coherence* through placing people at the insecure end of the hierarchy. This leads us to Hill's observation that in the late twentieth century people are continually changing environments and are exposed to many more places and some people and thus can exercise some choice as to what they became attached to:

> "Selection depends on the historical and actual conditions of a person's life and the ability of the object of attachment to mirror who one was, is and wants to be." (Hill 1996:584)

Hill appears to be suggesting that rather than attachments to some 'things' being necessary, being attached to some places or people may be more desirable than others. Thus having a home that is desirable to other people and of which one is proud, could increase ontological security. Part of the reason that prestige may increase ontological security is that a prestigious person is more likely to be in control and be protected. However choice for some people may mean less choice for others with consequences for their ontological security.

The concepts of protection, autonomy and prestige can be seen as elements of ontological security. These three elements are also present in research on the meaning of home. Rainwater (1966) believed that his work suggested that different groups of people wanted different things from their homes depending on how poor or rich they were. Rainwater discussed the results of two studies. The first was 2000 open ended interviews, examining the lifestyle of working class Americans, carried out in areas which represented the geographical range of the United States. The sample was composed of city and suburban dwellers, renters and owners. The

second study was a 5 year investigation into the problems of the notorious Pruitt-Igoe Project of St Louis, also in the US. The project consisted of 33 high rise blocks which opened in 1954; a decade later nearly a quarter were unoccupied and over half the households were headed by females on benefits. All inhabitants were black.

Rainwater divided the American working class into three groups 'slum dwellers', 'traditional working class' and 'modern working class'. He believed that the 'slum dwellers' were chiefly looking to the home for "shelter" which is similar to protection. The traditional working class were looking for "expressive elaboration" which I would suggest reflects having the ability to have some autonomy. Such people, Rainwater argued, would be more interested in basic maintenance and making the home cosy rather than being tasteful although they would be interested in household appliances to make housework easier. The modern working class are almost part of the middle classes whose interests would lie in homes that reflect "all American affluence" or providing prestige. These people would be interested in tasteful decorations and home ownership. Rainwater summarises the differences as follows:

> "The most disadvantaged groups are concerned with shelter per se; traditional working class families with opportunities to elaborate their dwellings in personally expressive ways; and the more prosperous modern working class with buying the 'all-American package.'" (Rainwater 1966:23)

In Erikson's model, children first encounter the basic step of protection followed by opportunities for autonomy and then prestige. Rainwater's work suggests that in housing people firstly look for protection, when that is solved they look for ways that their home can increase their autonomy, and then with more affluence they begin to look for homes that can provide them with prestige.

More recent work also corroborates this. Phe and Wakely (2000) using a case study set in Hanoi, in Vietnam, suggest that:

> "With a certain degree of simplification it can be said that housing in units at the lower price levels are mainly characterised by their utility as shelter... while houses at the higher price levels are characterised more by the attributes that make them commodities and favourable investments."
> (Phe and Wakely 2000:13)

They go further than Rainwater by suggesting that in some cultures prestige might be more desired than the protection elements. They suggest this theory might explain why good quality public renting estates are sometimes abandoned in favour of poorer quality housing which is in high status areas such as inner cities. In this case security from prestige would be superseding security from protection or autonomy. Of course higher prestige areas may also provide protection from anti social neighbours or vandalism.

In this section I explained why I chose to use the term 'ontological security'. Additionally I explained how three elements help pin down the elusive nature of ontological security: protection, autonomy and prestige. I also demonstrated that these three elements are present in the housing literature. With these three elements in mind it is now possible to proceed to look at the literature on housing tenure and ontological security.

3.3 Housing tenure and ontological security

In the last section I mentioned that Saunders had adopted Giddens' ideas on ontological security and had applied them to housing tenure. In this section I begin by describing the debate as to whether owner occupation is likely to be a source of ontological security through focussing on research by Saunders and then detailing other research which highlights issues of the importance of the definition of ontological security and the context of the sample. Then I examine further evidence on whether the components of ontological security are associated with housing tenure.

A description and critique of Saunders' work on ontological security and housing tenure

In this section I explore Saunders' arguments about housing tenure focussing on his work on ontological security, his 'Three towns study' and the substantial critiques of his work.

Saunders studied the meaning of housing tenure in the UK during a period of change in the 1980s when Council housing was being sold to sitting tenants. In addition to the introduction of ontological security to the tenure debate he was also arguing that men and women do not perceive the home differently, tenure differences are more

important than social class differences, homeowners are not leading more privatised lives and that all homeowners make financial gains from ownership (Saunders 1984; Saunders 1986; Saunders and Williams 1988; Saunders 1989; Saunders 1990).

Saunders' work in general has been heavily criticised although much of that criticism has been directed towards the other questions rather than that of ontological security. Feminists, for example, have come to different conclusions about gender in the home (Madigan, Munro et al. 1990; Stubbs 1988). Forrest and Murie have argued that social class is still at least as important as housing tenure (Forrest and Murie 1986) and that low income owners are certainly not guaranteed to make financial gains from their home (Forrest and Murie 1989). Barlow and Duncan (1988) suggest that there is no simple relationship between tenure and voting. These criticisms have led many to disregard Saunders' work in totality without looking in detail at some of the points he makes which may have import.

Saunders (1990) started with the observation that owner occupation continues to be the most popular tenure and that the Right to Buy scheme has had great uptake. His aim was to understand the popularity of owner occupied housing rather than actively promote a market forces ideology (Hamnett 1991) although other critics dismissed his work as Thatcherite polemic (e.g. Forrest 1991).

Saunders took Giddens' idea of the home being a 'locale' (Giddens 1984). Saunders writes that the home is more than just the people living within it; the home as a physical structure effects the social interactions of the inhabitants. He suggests that the home is:

> "More than just a household for it is also a physical unit located spatially. Households after all normally live in houses, or flats, or bungalows or 'mobile homes' and each household accomplishes its social organisation through these spatial forms... the physical and spatial aspects of the home are important in structuring household activities in that they both enable and constrain different patterns of action." (Saunders and Williams 1988:83)

Saunders suggests, for example, that lack of sound insulation could effect relationships with neighbours and feelings of privacy. Additionally lack of thermal insulation could make some areas of the dwelling too cold to use. However, Saunders is careful to state that he does not believe in environmental determinism.

He discusses how the same house may be used and decorated differently when inhabited by owner occupiers rather than tenants. Because the home is a place of physical and social relations, Saunders argues that it can provide ontological security:

> "Precisely because the home is simultaneously a social and physical location in the world, it does seem potentially to offer to some people a source of 'ontological security' a sense of niche and of belonging, which reflects its persistence in space (home is physically rooted) and in time (home is... both heritage and future asset, reproducible across the generations)."
> (Saunders and Williams 1988:87)

To Saunders, the home can become a place of constancy and stability in a threatening world. Despite the physical and social aspects of home appearing to be given equal weight, Saunders emphasises the physical aspects. In fact he only added the social aspects of home after Franklin (1986) criticised his earlier work (Saunders 1984) for ignoring the social side of the home.

To explore his hypotheses Saunders conducted a survey of 522 people in 450 households across three English towns (Slough, Derby and Burnley) in 1986. Tenants from the most and least popular council estate in each town and a variety of owner occupiers were interviewed. He found that the differences between tenure discussed by his owners and tenants in the sample included:

> "Autonomy (the right to do what you will with the dwelling) and... long term financial security (the idea that rent is 'money down the drain')."
> (Saunders 1989:186)

In the survey one question was 'People often distinguish between 'house' and 'home'. What does the home mean to you?' The distribution of answers to this question by tenure is provided in table 3.2.

Table 3.2 The meaning of home from Saunders' three towns survey

	All Owners		Council house buyers		Tenants	
	N	%	N	%	N	%
Family, love, children	111	**33**	12	**28**	48	**43**
Comfort, relaxation	95	**28**	16	**37**	16	**14**
Place you own or worked for	60	**18**	9	**21**	19	**17**
Belonging in neighbourhood	37	**11**	5	**12**	24	**21**
Personal possessions	38	**11**	2	**5**	6	**5**
Long residence or memories	25	**8**	6	**14**	10	**9**
Privacy, a retreat, peace	12	**4**	2	**5**	4	**4**
Place of sanctuary or safety	14	**4**	1	**2**	2	**2**
Independence, being your own boss	12	**4**	5	**12**	2	**2**
Don't know	22	**7**	4	**9**	7	**6**
Total	334		45		113	

Reproduced from (Saunders 1990:273)

Tenants were more likely to see home as meaning people, either family or the neighbours. Owners mentioned comfort and possessions more often. For council house buyers, independence was more of an issue than for other groups. Saunders interpreted these differences as suggesting that:

> "People may find it difficult to establish a sense of belonging in a house when they do not own it... owners are more likely than tenants to express a sense of self and belonging through their houses." (Saunders 1989:187)

Similarly Saunders found that owners were more likely to feel attached to their homes (table 3.3) despite tenants living in their houses for longer.

Table 3.3 Attachment to the home from Saunders' three towns survey

	Owners		Tenants	
	N	%	N	%
Strong feeling of attachment	226	**64**	48	**40**
No strong feeling of attachment	100	**28**	55	**46**
Ambivalent or other feelings	29	**8**	17	**14**
P<.01				

Reproduced from (Saunders 1990:295)

Another way in which owners and renters differed was in their attitude towards maintenance. For owners, decorating was a source of pride and self worth, whereas for renters maintenance was grudgingly done when the council were not fulfilling what was seen to be their responsibility. Tenants saw repairs as benefiting the

council rather than themselves. This, together with the fact that tenants' homes had been allocated to them, rather than chosen, led Saunders to believe that tenants felt "a sense of alienation from their home" (Saunders 1989:188). Saunders suggested that just as factory workers are alienated from their work because the factory does not belong to them, renters feel alienated and less likely to do work in their homes. However in Saunders' study about 80% of both renters and owners had actually done some decorating (although twice as many owners (16%) as renters said DIY was a hobby) (Saunders 1990).

Saunders also has made some attempts to address criticisms of the idea that ontological security can be related to home ownership in his book 'A Nation of Home Owners'. Firstly he argues that although ontological security is difficult to define, Giddens and Laing's definitions suggest that ontological security:

> "Has something to do with expression of self and identity and the evidence discussed in this section can leave little doubt that home ownership may play a key role in this process." (Saunders 1990:302)

Saunders is suggesting that feeling attached to the home, feeling comfortable there and spending time on home improvements create ontological security in home owners. A criticism of Saunders' ideas is that home ownership cannot be equated with ontological security because in many parts of the world and in previous times home ownership was unfeasible and not part of the culture. Saunders' reply to this is that he is not arguing that non owners have no sense of ontological security but that they must obtain ontological security in other ways, although:

> "It is also possible, of course, that these groups do or did not achieve a strong feeling of security in the world and that their lives are or were all the more miserable as a result." (Saunders 1990:303)

Saunders also claims that humans have always had a desire for ownership and territory.

Since 'A Nation of Home Owners' was published there have been some more criticisms of Saunders work. Byrne (1991) criticises the three towns study as having a low response rate (44%) and not being representative as it was conducted in free standing towns although the majority of British households live in conurbations, and skilled manual workers (precisely those likely to buy council stock) were under

represented. Only 45 respondents had bought their council dwellings. However Kingston argues, "on a number of technical grounds, Saunders' data and statistical analyses can be questioned but the evidence seems sufficiently solid to support his main claims" (Kingston 1992:62-63). How people view Saunders' data seems to depend on the critics' view of Saunders' ideas.

Saunders was criticised, by Forrest and Murie (1990), for trying to bias answers. For example in the questionnaire positive questions were asked about ownership such as 'Would you say you have made money out of owning a house' and negative ones about renting 'have you ever wanted to do something in the house which your tenancy agreement has prevented you from doing'. It is also true that data that do not completely agree with his theory tend to be disguised. For example I noticed that the information that 80% of owners had done some decorating is separated by a couple of pages from the statistic that 80% of tenants have also done some decorating.

Forrest and Murie can themselves be criticised in the way they present their data however. They criticise Saunders for suggesting that home ownership is a natural desire, yet their own data (from a household survey of 600 respondents in working class areas of Consett, Cheltenham and Accrington) shows that 80% of owners and renters in good and bad areas approve of council house sales (Forrest and Murie 1990) and 80% strongly agree that people naturally prefer to own their own homes (Forrest, Murie et al. 1990).

Other critics argue that ontological security as an explanation for a preference for home ownership is unnecessary as the financial benefits of owner occupation are all that is needed for people to prefer home ownership (Hamnett 1991) and be more attached to their homes (Harloe 1992). However Saunders (1989) argues that the financial security of home ownership is a factor that increases ontological security. Another issue is that Saunders advocates home ownership for all and does not spend much time addressing the possibility that for some people ownership could never be an option (Forrest 1991) at which point advantages and disadvantages of private and public renting for ontological security would become important issues to debate.

In summary Saunders took Giddens idea of the home being a 'locale' (Giddens 1984). Because the home is a place of physical and social relations Saunders argues that it can provide ontological security. Despite the physical and social aspects of home appearing to be given equal weight, in Saunders work, the social aspects of home are played down. Saunders has made some attempts to address criticisms of the idea that ontological security can be related to home ownership in his book 'A Nation of Homeowners'. Saunders suggests feeling attached to the home, feeling comfortable there and spending time working on the home create ontological security in homeowners. Saunders also argues that the financial security of home ownership increases ontological security.

Saunders and the three aspects of ontological security: protection, autonomy and prestige

Saunders does not directly talk about protection, autonomy and prestige. Nevertheless all three are present in his arguments.

Saunders does not spend much time on the protective aspects of home ownership except that the home provides financial security. He suggests that having more privacy and a space to hide can foster ontological security. He does concede that rented dwellings can also provide privacy except in especially bad circumstances (Saunders 1990). For Saunders the main protective aspect of owner occupation is that financial wealth is accumulated although he did note that more owners talked about feeling comfortable as if cocooned in the home. They had perhaps done more to make their home comfortable and protected. In this way more autonomy could be linked to feeling more protected in the home.

In previous work on ontological security it has been found that those with more security in infancy then have more autonomy and more capacity for exploration later (see section 3.2). Saunders found in his study that owners were more likely to belong to organisations and to go out more ($p<.01$). This may result from owners' higher incomes than tenants. However Saunders suggests that another reason is that:

> "It is only when people feel secure in the home that they are likely to venture out to play an active role in the wider society, whether at work or in the local neighbourhood." (Saunders 1990:290)

An owner occupied house perhaps provides a secure base from which the owner can go out into the world.

Saunders thus argued that autonomy was also an important facet of home ownership. Private property:

> "Does function in important ways as a means of maintaining control over one's personal world and of expressing one's identity, both to self and others." (Saunders 1984:220)

Saunders suggests that equalising the tenures by giving tenants more rights through tenants' charters and through tax relief on rent as well as mortgages should be helpful. However he argued that rather than just fulfilling needs for control, home ownership also fulfils needs for ontological security:

> "Home owners appear to find ample and genuine satisfaction in their home-based pursuits – gardening, decorating, furnishing, DIY and the rest – and the fact (persistently referred to in the literature) that home ownership appears to be a conservatising influence must surely lead us to conclude that this is so precisely because it (to some extent at least) compensates felt human needs." (Saunders 1984:223)

Home ownership can thus provide more autonomy in home maintenance and decisions about how it can be improved.

Saunders also discusses the prestige of ownership:

> "The cultural significance of tenure – the status which is sought and conferred through purchase and the growing stigmatisation of the public rented sector; the enhanced control over the immediate home environment which comes with the acquisition of domestic property rights; and most important of all, the intangible yet crucial significance of *possession* via ownership of what is for most people the core resource of everyday living – the home." (Saunders and Williams 1988:86)

Saunders argues that those who own their homes have the status of an owner and more status that comes with control. The public rented sector is increasingly seen as low status.

To conclude we can say that Saunders' work provides a link between the literatures of ontological security and tenure. His work implies that owner occupied housing can provide more protection, autonomy and prestige than public renting. There are some shortcomings to his work:

- His sample underrepresented skilled manual workers who are perhaps those who are most likely to have changed from renting to owning.
- In his analysis of the three towns survey (Saunders 1989; Saunders 1990) it is not always clear which differences were significant and if and when controls for income were used in the analysis.
- He did not focus on differences within tenure, for example in household types and in general. Thus he under-emphasises the importance of the social in favour of the physical structure.
- He neglects the phenomena of increasing job insecurity, relationship breakdown and mobility that means life is less stable and owner occupation perhaps more difficult to achieve and sustain.

It is also necessary to understand the context in which Saunders was writing. During the 1980s house prices increased and the British Government was Conservative for the whole decade; job insecurity was still more confined to less skilled manual workers (who were more likely to be renting anyway) which was not true after the recession of the early 1990s.

Issues for the definition of ontological security revealed by studies of ontological security and housing tenure

Other academics studying ontological security and housing tenure have shown weaknesses in the theory that ontological security is provided by home ownership. Not all potential owners have taken up the Right to Buy and the boundaries of ontological security appear to be ambiguous. Is ontological security different to emotional or physical security? How does ontological security overlap with other psychological constructs such as perceived control and self esteem? These issues are covered in this section.

McLaverty and Yip (1993) took the concept of ontological security into account when analysing tenure preferences indicated in the GHS between 1978 and 1988. The question asked was 'If you were considering moving somewhere else would you prefer to rent or buy your home?' They note that at both time points less than half of council tenants wished to buy their homes. However from the GHS it is unclear whether tenants did not want to buy or whether tenants thought it would be impossible for them to buy. The authors found that many tenants did not have

mortgage potential due to low income and savings. Nearly 400 000 tenants, however, who could buy their homes under the Right to Buy scheme had not done so. They suggest three reasons for this: firstly the tenants might not have heard of the scheme which they argued is unlikely due to its high publicity; in another study (detailed later) it was found that less than 5% did not know of the scheme (Lynn 1991); secondly they may fear their long term financial future is uncertain; or thirdly they do not feel their ontological security would be enhanced by owning. However ontological security is enhanced through routines and norms. It may be difficult for some tenants to make the change from renting to owning because this would involve changing routines and having increased responsibilities.

The authors realise that the results of their study cannot be used to make any definitive suggestions because the GHS is not designed to look at the meanings of housing tenure. They conclude:

> "We do not argue that 'ontological security' should be abandoned as an analytical tool. The term *may* have real significance. However we do argue that the term needs more refinement." (McLaverty and Yip 1993:1571)

Whereas McLaverty and Yip suggest the definition of ontological security needs to be further enhanced, work by Gurney demonstrates that the term can be interpreted quite differently by different academics.

Gurney conducted a three part study for his PhD thesis on the meaning of home:

> "The *St George Postal Survey* was administered to a purposive sample of 357 households in July 1990. The sample was deliberately constructed to focus upon a residential district with high rates of working class owner occupation... The *St George Interview Questionnaire Survey* was administered to a sample of 27 owner occupier households selected on the basis of the results to the postal survey... interviews normally lasted about 90 minutes... The *St George Unstructured Interview Survey* was administered to a sample of four key respondents' households which were selected from the second sample stage." (Gurney 1999:181)

There was a response rate of 32% to the postal survey. Out of the 115 replies 108 were owner occupiers, 2 had long term secure tenancies, one rented with a job and 4 respondents missed out the question. The results of the postal survey mainly reflect an owner occupying sample.

The postal survey included an open ended question: 'Some people say that the words house and home mean quite different things. What does your home mean to you?'. There were 103 respondents who answered this question. Security was mentioned 36 times. Gurney identified four ways in which security was used: financial (5 responses), stability (6 responses), safety (17 responses) and unclear (8 responses). Gurney therefore decided not to look at the term security on its own but to split it into its component parts. Gurney identified 12 discourses of home. Gurney did not see them in terms of protection, autonomy and prestige. However I feel that, with a few exceptions, they can be divided into these three components (see table 3.4).

Table 3.4 Discourses of the meaning of the home from the St George Postal Survey

Gurney's title	My description from words used by respondents	Number of mentions
Protection		
Emotions	Stable family & relations	103
Back region	Privacy/haven	43
Relaxation	Rest	33
Comfort	Warm/ cosy	29
Safety	Safety	28
Autonomy		
Autonomy	Do as you wish	20
Personalisation	Decorate to your taste	22
Prestige		
Ownership	Pride, something for children	27
Front region	Entertain guests, the neighbourhood	20
Ambivalence		
Negative/instrumental	Does not feel like a home, worry	33
What you make it	Depends on the individual	9
Other	Unclassified	41

Based on (Gurney 1996:209)

My reading of the table is as follows. The most mentioned aspect appears to be the idea of a place to feel protected, where one can be oneself in the bosom of the family, in comfortable surroundings and without being watched by the critical eye of the outside world. The issue of having control over what goes on and being to express identity through personalisation is present. Prestige was also mentioned in having a home to feel proud of and to not be ashamed of when showing to guests.

Just as children can be insecurely attached, or people who lose or do not establish a sense of ontological security (as defined by Laing), do not have positive relationships with other people, the same was found of the home. Some respondents found the home a worry or did not invest emotional meanings to it. Other respondents noted that a person's feelings of home reflected their thoughts and actions. I would like to reiterate that this table is my interpretation of Gurney's results. It is possible that the neighbourhood aspect of the front region, and the family part of protection, could be viewed as something separate from either protection or prestige. However the emotions and front region categories only make up just over a third of the responses. Respondents did seem to see home as more than just the family. I would say that Gurney's results suggest that there is evidence of a sense of ontological security arising from people's relationship with the home through protection, autonomy and prestige gained from it.

Gurney however does not come to the same conclusions.

> "A tenure specific meaning of home was not apparent. Feelings of ontological security were absent. Other forms of security were apparent however, notably emotional security and physical security." (Gurney 1996:237)

Gurney views ontological security differently from Saunders which may explain some of the confusion. Saunders used ontological security interchangeably with psychological and emotional security (Saunders 1990). I would argue that they are part of ontological security. Feeling comfortable enough to express emotions and not withdraw is an important part of ontological security. Giddens' idea of locale suggests that these relations with people in the household are constrained by the physical nature of the dwelling. I would also like to take issue with Gurney's contention that he did not find a 'tenure specific meaning of home' for two reasons. Firstly the discourse of 'ownership' could not be applied to renting and secondly without a control group of other tenures in the study it is not possible to know whether some of the other discourses might not apply to renters.

Another difference between Gurney's and Saunders understanding of ontological security is in the prestige element. Rather than viewing negative descriptions of renters in his interviews as part of ontological security, Gurney saw them as separate.

He saw such views as 'tenure prejudice'. The main difference, cited by his interviewees, between owners and renters was that owners look after their houses more. This is similar to Saunders' discussion of DIY in his sample. Gurney sees this as having no real foundation: "The apocryphal stories of life on council estates seemed often to be based upon an untestable logic and were acted upon as if demonstrably true" (Gurney 1996:332). Similar work in the United States has also shown the existence of negative stereotypes of public housing residents: Salzer asked 42 college students to write stories about a public housing resident. He found the stories emphasized:

> "Drug use, crime, poor education, illiteracy, stupidity, immorality and residents never making anything of their lives and forever living in public housing." (Salzer 2000:134-135).

The students in the sample would be unlikely to have personal experience of public housing and would know only sensationalised media reports. Gurney also notes that with fewer people now being renters, UK owners have less personal knowledge of the rented sector and obtain their information from the mass media. Living in housing which is negatively stereotyped by the rest of the population itself may, I suggest, contribute to feelings of shame.

However in one of Gurney's interviews a respondent explicitly connected owner occupation to the idea of the dwelling being viewed as a home where one could put down roots. According to Gurney's interviewee this occurred because of the increased responsibility of owners over their homes. This suggests that there may be some basis for owners being more likely to look after their houses which would then make them more homely and comfortable. They could then perhaps be more likely to create a home which provides ontological security. Having a home of which one is not ashamed can additionally contribute towards a sense of ontological security.

Gurney's work raises substantive issues on the subject of housing tenure and ontological security:

- The term ontological security can be interpreted in different ways.
- Are tenure differences in ontological security the result of real differences or are they due to prejudice supported by popular ideology and increased by the residualisation of the rented sector?

Rohe took Saunders' term of ontological security and saw it principally as relating to control. Rohe and colleagues conducted a prospective study of tenants who bought their homes in a home ownership programme in Baltimore. Ninety homeowners were interviewed before they bought their home and 18 months after buying their home (Rohe and Stegman 1994a) and they were then reinterviewed three years after moving into their home (Rohe and Basolo 1997). In the first round there were 143 interviews. There was also a control group of renters with similar demographic characteristics to the home buyers.

Self esteem, perceived control and life satisfaction were measured. No significant differences were found in self esteem or perceived control in the three year period but they did find that the owners reported more life satisfaction after buying their home. Homeowners were also found to attend more neighbourhood/block association meetings but there were no significant differences in informal interaction or other formal interactions. In relation to ontological security they suggest that:

> "It is not clear why homeowners express greater life satisfaction. If the explanation was Saunders's concept of 'ontological security' one would expect that home owners, compared to renters would have experienced higher levels of perceived control." (Rohe and Basolo 1997:815)

The concept of ontological security, I would argue, is much more than simply perceived control and may actually relate more to satisfaction in general than just control.

McLaverty and Yip's work suggests that the need for ontological security as supplied by housing tenure is not overwhelming. The importance of ontological security from the home reported by various studies appears to be related to how it is defined in that particular study.

The importance of context in work on ontological security and housing tenure

The studies that I describe next illustrate the importance of the place and the time that data is collected. A reason for this is that the relative merits of different housing tenures appear to affected by the surrounding societal conditions.

Stubbs (1988) conducted structured interviews and informal taped interviews with 163 residents of three council estates in Sunderland. There were 27 early buyers who had bought their homes between 1968 and 1972 when the Conservative Council had encouraged tenants to buy their homes, 74 late buyers who had bought their homes under the 1980 Housing Act (through the Right to Buy scheme) and 62 non buyers. All groups had lived on their estate since the 1970s which was fairly typical of inhabitants of these estates. Stubbs suggests that the advantage of the design allows the "changing nature of both council tenancy and owner occupation to be explored within a limited context" (Stubbs 1988:149).

Another advantage of the design is that it includes a renting control group. However in most of her analysis she does not concentrate on differences between the two groups. Households who were buying were more likely to have a man in fulltime work and were more likely to be in a nuclear family arrangement (married with dependent children). The link between ontological security and home ownership may depend on the context of the composition of the household.

Issues of protection, autonomy and prestige are of relevance in Stubbs findings although she does not characterise them as such. Outside the home economic conditions were changing and there was growing youth unemployment. With the Right to Buy scheme there were fewer council properties available for the next generation. Respondents discussed buying their home to protect a non resident son or daughter's future: after parents' deaths the home could be sold to provide wealth. Stubbs argues that the deteriorating conditions in the council sector and the reduction in properties available meant that respondents bought their homes as "a matter of securing family use values" (Stubbs 1988:152). The security was for their families. Giddens' definition of ontological security is to do with the certainties of life. I would argue that by increasing the chances that their children will have a good home parents are extending the certainties of their own lives and thus their ontological security as they know their children will be provided for. Housing tenure may be particularly relevant for ontological security in the context of the nuclear family.

Another important finding is that respondents' housing histories were characterised by the desire to get into the best condition housing, which varied between tenures

over time. However for many their first adult housing was private renting which was not seen as secure: "they still remembered vividly the physical conditions and insecurity that this tenure then invoked" (Stubbs 1988:151). The new council housing was seen as a vast improvement with better facilities, more space and a more genial landlord. In the early years the "settled nature of council tenancy" (Stubbs 1988:152) meant that tenants were allowed to make improvements and transferring between properties was relatively easy. In another study of people who purchased their houses between 1968 and 1973 (described later) about four fifths were strongly or fairly satisfied with their council housing (Forrest and Murie 1990).

Over time the nature of the council as landlord had changed and conditions in the public rented sector deteriorated. Later changes meant that there was a cumbersome bureaucratic process to get permission to make changes; rents were higher so economic benefits declined and dwellings deteriorated through lack of repairs. These sorts of issues suggest that tenants' autonomy was being impaired: they could no longer do what they wanted with their houses or get repairs done, and with higher rents they were losing economic autonomy. In this way tenants were also becoming less protected in their council homes as they were no longer protected from poor conditions.

The buyers discussed changes in prestige, as they tended to view the house differently after it was purchased. However they did not wish to flaunt their new status. Many respondents emphasised that they still saw themselves as working class. Stubbs suggests "the significance of the change remains personal and is personally and privately celebrated" (Stubbs 1988:155). Stubbs contends that this means that this change of status was "uneasily recognised" (Stubbs 1988:155) and thus the change is not to do with ontological security. Saunders (1990) argues that Stubbs' data support the ontological security theory; enhanced ontological security is likely to be a quiet internal change rather than a brash display; garish displays, Saunders suggests, may signal internal disquiet.

Stubbs' work is useful in that she locates home buying in the context of the surrounding milieu. Particular issues from Stubbs' work for the concept of ontological security are that:

- Needs for ontological security may extend to wanting security for one's children.
- Rather than the public sector being automatically associated with insecurity the conditions within that sector may make it more or less secure.

Dupuis and Thorns investigated the topic of ontological security and tenure in older homeowners in New Zealand. Their data came from in depth interviews with a subsample of respondents from a study on housing wealth inheritance. The 53 respondents were aged 50 or older, 79% were women and all were of European rather than Maori descent. The situation in New Zealand is somewhat different than in Britain. Firstly the alternative to owner occupation for respondents tended to be private rather than public renting. Secondly a secure home was seen as a priority due to the 1930s depression when unemployment was high and many people lost their homes through being unable to pay mortgages (Dupuis and Thorns 1996). There may thus be a longer history of a desire for home ownership in New Zealand than in the UK (where the response to the insecurities of World War II was to build large amounts of social rented housing although some social housing was also built in New Zealand at this time) (Dupuis and Thorns 1998).

Dupuis and Thorns divided ontological security into four aspects based on work by Saunders and Giddens:

> (i) Home as a site of **constancy** in the social and material environment
> (ii) Home as a spatial context in which the day to day **routines** of human existence are performed
> (iii) Home as a site where people feel most in **control** of their lives because they feel free from the surveillance that is part of the contemporary world
> (iv) Home as a secure base around which **identities are constructed** (Dupuis and Thorns 1998:29) [my emphasis]

They found that home ownership was seen as providing constancy or protection because "it won't be sold over your head" (Dupuis and Thorns 1998:32), autonomy or personalisation as "respondents spoke of adapting their homes in ways to suit themselves" (Dupuis and Thorns 1998:36), a secure base or status because "in New Zealand becoming a home owner... is looked on as an achievement... to be a home

owner is to have 'made it'" (Dupuis and Thorns 1998:37). Tenure however was not mentioned in the context of routine.

Respondents in Dupuis and Thorns study made very strong links between ontological security from the home and family. Some respondents were attached to their homes because of the memories of their children growing up there. Furthermore the home could provide security for their children in the future. Their study also suggested that respondents were actively seeking security when becoming homeowners, rather than ontological security only operating at an unconscious level.

This study does have limitations in that respondents were all older homeowners. Moreover four fifths of the respondents had grown up in owner occupied housing meaning that they could not contrast ownership and renting from their own experience. Dupuis and Thorns suggest themselves that younger people may view home very differently (for example because of the higher proportion of women in the labour force). The context in which each generation finds themselves may be important in influencing whether our sense of trust in the world is linked to owning one's own dwelling place. Their study did however suggest that owner occupation might well enhance feelings of ontological security for their New Zealand sample.

Nettleton and Burrows focussed on a different group of homeowners. They examined mortgage indebtedness and health using the British Household Panel Survey (BHPS) (Nettleton and Burrows 1998). The BHPS is a nationally representative sample of about 5000 households. The individuals (aged over 16) within the households are interviewed annually together with any members of new households of which they might have become part. This longitudinal element means that it is easier to establish causal connections. They found that when people became behind with their mortgage payments their mental health, as measured by GHQ12, worsened. However it was impossible to discount the hypothesis that poor health leads to mortgage arrears rather than arrears resulting in ill health. There is no direct measure of ontological security in the BHPS so Nettleton and Burrows have to infer that changes relate to a sense of ontological security or lack of it.

Possible evidence that ontological security is a dynamic concept comes from this study. Nettleton and Burrows examined data from two time points: 1991-2 and 1994-5. At the first time point but not at the second, men who were in arrears made more doctor visits. Nettleton and Burrows suggest two explanations for this. Firstly they suggest that judges had become more lenient in repossessions by 1994-5 so that indebtedness was less likely to lead to repossessions. Secondly they suggest that in 1991-2 more people were experiencing problems so people with mortgage indebtedness felt worse about it as there was more economic insecurity about. However they later contradict this to some extent by saying "it is not a life event which is experienced collectively, its antecedents and consequences are intensely personal" (Dupuis and Thorns 1998:745). This latter sentence implies that the experiences of other people should not affect one's own mental health whereas it seems plausible that stories of personal friends and family as well as stories in the media may well have a bearing on one's own feelings.

I would suggest a further explanation is that threat of repossession was a rare event prior to 1990 as people who were likely to have problems during recessions and otherwise were more likely to be in social rented housing. By 1994-5 people had become used to the fact that home ownership was not a panacea and so they had adapted their beliefs so that they could deal with having problems with home ownership. In other words they had adapted their understanding of the way life works so that they could move forward when in difficulties. In 1991-2 people's ontological security was more threatened because home ownership was meant to represent stability whereas in 1994-5 people's ontological security was less threatened because they understood that home ownership was not guaranteed to be continuous. This explanation suggests that ontological security is a dynamic concept and may come more from homes in some circumstances than others, or it may be that today people are less ontologically secure.

Nettleton and Burrows also conducted a qualitative study with households whose homes had been repossessed in the 1990s. They interviewed 44 adults from 30 households, and 17 children from 10 of the 30 households. Their findings showed that:

> "The stressful nature and emotional intensity of the experience can affect health both directly (through physiological changes) and indirectly (through invoking 'unhealthy' behaviours)." (Nettleton and Burrows 2000:478)

Some respondents reported smoking more or consuming more alcohol and many had eating, sleeping and breathing problems. Respondents recalled how the experience affected the core of their being, likening the experience to the death of someone close and thus they imply the experience may influence ontological security.

Although they did not use the terms 'protection', 'autonomy' and 'prestige', these features are discussed. People talked of feeling frightened and about fears of moving to a problem estate. Lack of control over the move and the impersonal nature of the repossession process was also an issue. Interviewees also felt ashamed that they had failed to sustain home ownership, which was being promoted as desirable by the government, and thus they felt bad about their loss of prestige. Some reported a global loss of confidence which made their search for employment harder. This work suggests that the forced exit from home ownership is often experienced as a disruption to ontological security.

Thus the context in which ontological security and tenure is studied is critical. Contexts that are relevant include the surrounding society and the meaning of tenure in that society. Additionally the type of owner occupiers who are interviewed is of relevance.

Summary of ontological security and housing tenure

Some writers have linked home ownership to ontological security. However the evidence suggested that ontological security may not be linked so much to home ownership as to the lack of security in other tenures, having stable relations within the home and a stable income meaning there is no threat of repossession. Home ownership may be a source of insecurity for homeowners who are only at the margin of home ownership. There has been much debate about ontological security and tenure which has not as yet been satisfactorily settled. The same data can be interpreted in different ways. Additionally most research was conducted in the 1980s to examine the effects of the new Right to Buy scheme. Near the end of the 1990s more changes have occurred which may have altered the relationship between ontological security and housing tenure further. Aspects of protection, autonomy

and prestige could be found in writing on the subject of home ownership and ontological security. In the remainder of this section further evidence for the importance of these three elements will be discussed.

3.4 The components of ontological security and studies of housing

In the previous section I examined studies which have specifically concentrated on ontological security. In this section I describe studies of housing tenure that were not centred on ontological security but which nevertheless imply that protection, autonomy and prestige could be important issues for research on housing tenure.

Protection

Studies suggest two threats to protection. Firstly threats from undesirable neighbourhoods and secondly the threat of being forced out of the home; this is a threat to the reliability of the world.

Lack of protection in social rented dwellings may well be to do with the type of area in which they are situated. Lawrence and Hartig suggest that:

> "Delinquency, vandalism, crime and violence as consequences of economic disadvantage do not only result in material loss and physical harm to other residents in poor areas, but also undermine the security and satisfaction that residents feel in their neighbourhoods and perhaps even in their homes. In this way they are deprived of social and psychological health resources that a safe home, good contacts with neighbours and near home leisure and aesthetic amenities can provide." (Lawrence and Hartig 1998:267)

To examine the problems of tenure it is helpful to remember the locality in which the homes are situated. In America some public housing schemes have resorted to high fencing to keep out potential criminals. However the ugly fortress nature of the fencing has led some residents to question whether living within such an area is not further stigmatising. In one of the areas Leavitt and Loukaitou-Sideris studied, fencing had been constructed with spikes facing inwards. In such areas respondents reported sleeping with knives under their pillows. The authors conclude that:

> "This vulnerability that many residents say they feel in their home and immediate surroundings defies any concept of the home as haven."
> (Leavitt and Loukaitou-Sideris 1995:232)

Residents wished for better lighting and locks on their doors, rather than fences, to help their security situation.

In the extreme situation of the public housing estates of Pruitt-Igoo, Rainwater (1966) outlined non human and human sources of danger. The buildings themselves could be dangerous due for example to vermin, temperature, dangerous wiring, insufficiently protected heights, lack of privacy and cost. The people living in these areas could also present threats such as crime, verbal hostility and the proximity of alternative lifestyles such as drug taking. However Rainwater also found that in these areas people saw their homes as a greater source of protection than others because of the relatively worse circumstances outside their doors. Although the situation may not be so serious in the UK, Prescott-Clarke, Allen et al. (1988) found that thirty percent of people who had turned down a council house had done so because it was located in an undesirable environment. This was in a study of waiting lists for council housing in the mid 1980s in 25 English local authorities.

When discussing the protective aspects of tenure in Britain, respondents are also likely to talk about the financial security that buying a house can bring. Kempson and Mackinnon (1994) conducted a postal survey of 12 203 households selected from 40 English postcodes (with a response rate of 60%) and interviewed 538 people, at the margins of owning, selected from the postal survey. One question in the postal survey asked respondents to indicate what was the best thing about owning a home and the best thing about renting a home. The modal category for owning a home was investment (41%), however the next highest category was 'a sense of security' (26%). In interviews respondents mentioned the importance of having security in the long term. However 8% said security was the best thing about renting. Interviewees discussed fear of being repossessed.

Forrest and Murie (1990) conducted an interview study of households who purchased their dwelling from the council between 1968 and 1973. There were over 400 interviews divided equally between Birmingham and London. Just over a fifth of respondents had bought council houses on the open market (they were either previously council tenants elsewhere or had been in the past) and the rest were sitting tenants. The respondents were asked a series of questions, relating to tenure, about their satisfaction with their current experiences of owning and their previous experiences of renting (table 3.5). One question was about security if their

circumstances changed. Despite the risk of repossession with home ownership, only 7% strongly agreed that they were satisfied with the security renting could provide whereas 67% strongly agreed that that they were satisfied with the security that owning could provide.

Social and Community Planning Research (SCPR now renamed the National Centre for Social Research) conducted a study of tenants and Right to Buy owners in 1986 and the sample was followed up in 1989 (Lynn 1991). There were 1031 pre-1986 buyers, 96 new buyers and 824 tenants. Owners and tenants who were in the process of buying were given 17 cards each containing a reason for buying their home. They sorted the cards by their importance. Again a good investment and security were the two most cited reasons for buying a council house. The idea that security is obtained more from owned houses than council houses is pervasive, despite council tenants having security of tenure since 1980. Moreover low income tenants' rent can be paid through benefits, whereas owners must have a reasonable and constant source of income to be able to pay their mortgages. Nevertheless concerns may be justified as the government have since attempted get rid of security of tenure in the social rented sector (Birchall 1992).

For some people, home ownership is not associated with protection. Repossession is a threat to owners unable to afford mortgage payments. Homeowners can get no government help for their first 39 weeks off work and from this point they can only get help with the interest payments. There are private insurance schemes, but these tend to be expensive and to exclude the most vulnerable groups (Easterlow, Smith et al. 2000).

Threats from neighbours and criminals in social rented estates are serious. When discussing the protective aspects of tenure, respondents are also likely to talk about the financial security provided by owner occupation. In interviews, respondents mentioned the importance of long term security. For some people, home ownership is not associated with protection. Repossession is a threat to owners unable to afford mortgage payments. Despite the risk of repossession with home ownership, only a minority are satisfied with security available from renting. Since 1980 local authority tenants have had security of tenure but public renters' concerns over

security may be justified as the government have since attempted to weaken security of tenure in the social rented sector.

Autonomy

Autonomy has been discussed in terms of making changes to the dwelling and the ability to move home. When asked the question about the most important reason for buying a council house, in the SCPR study, about a third suggested autonomy reasons such as 'can do what you like to the property', 'can carry out repairs when and how you like' and 'gives freedom to move'.

In Forrest and Murie's study of council house purchasers some of the questions were about autonomy (table 3.5). Less than ten percent strongly agreed that they had been satisfied with getting repairs and maintenance done, freedom to make alterations and their ability to move. As owners, over half strongly agreed that they were satisfied with these things. However it should be noted that 80% had been at least fairly satisfied with their council housing overall.

Table 3.5 Percentages strongly agreeing with each aspect in Forrest and Murie's study of council house purchasers (Average percentages over the three types of purchasers)

	Renting experience	Owning experience
Security if your circumstances changed	7	67
Rent levels/mortgage payments	12	65
Feeling that the house is your own	18	87
Quality of the accommodation	28	66
Getting repairs and maintenance done	7	51
Freedom to do what you want with the property	5	74
Ability to move	6	56

Based on tables 6 and 7 (Forrest and Murie 1990)

According to Allen (2000), the way that council housing renovation is often conducted can exacerbate tenants' feelings of a lack of control. Allen interviewed 16 tenants before and after housing renewal. The work involved people being moved out of their homes while repairs were taking place. Despite most of the homes formerly being in poor repair, with problems of cold and damp, many interviewees were not happy about the renewal and some felt their health was suffering. The main reason for this was worries about lack of control. Some

interviewees felt that they did not have enough choice over improvements and did not feel they needed all the improvements. Another issue was the stress of having to move out, especially when they were not provided with precise details about where and when they were going. However Allen notes that some interviewees did not stress control: in some cases they were willing to put up with problems because they wanted improved housing or in other cases lack of autonomy was a normal feature of their lives at the bottom end of the social scale. Allen suggested that the large scale nature of the renovation was a problem. Local authorities attempt to make economies of scale by treating estates uniformly when the needs of individual tenants may differ widely.

For those in poor health the extra control provided by owner occupation may not be helpful if they cannot afford to make adaptations to their home. Disabled people may not be able to choose a home independently if their mobility is impaired. Owners may also be forced to move if their current home does not suit their needs (Smith, Easterlow et al. 2000).

It appears that renters may suffer a lack of autonomy over whether repairs take place at all and what exactly is done. Owners in general are happier about their ability to move but finding a home may be difficult for disabled people.

Prestige

Owner occupation is associated with successful people. This has implications for opting for the Right to Buy scheme, inviting guests to the home, selling properties and for displaying one's place in the world.

Marcuse (1975) discussed the possibility of attaining prestige from home ownership:

> "The average home owner is higher status, better paid, better educated, richer and more middle class than the average tenant. Consequently the change from tenant to home owner increases the likelihood that the individual will be taken to be higher status, well paid and middle class." (Marcuse 1975:75)

Thus the image of ownership may make tenure an issue. In Forrest and Murie's study in three working class areas there was a strong belief that success in life and home ownership were linked. Sixty five percent agreed that 'people who are successful in life become home owners'. However it is unclear in this question

whether home ownership is part of success or a marker for success (Forrest, Murie et al. 1990).

Prestige related reasons to buy a council home were less important to respondents in the SCPR survey (Lynn 1991). Only 5% of owners and 2% of tenants said that ownership 'giv[ing] a feeling of pride to own your home' was the most important reason for buying. About half of each group, however, said it was a very important reason. Similar numbers felt that 'can use as stepping stone to better home' was the most important, and nearly two fifths said it was a very important reason although similar numbers felt it was not very important. This may be because two fifths of respondents felt they were going to live in the same house all their lives so they might as well buy their home. This may reflect the age of the respondents.

Living in low prestige housing can affect outsiders' views. In Leavitt and Loukaito-Sideris' (1995) study of American Public housing, respondents reported that others thought of them as 'bad' people. This could affect social relations (for example one respondent's boyfriend would not visit her house). Public housing is also stigmatised intentionally or unintentionally by planning decisions. For example high speed roads separated two of the public renting estates studied from the rest of the town. Montgomery (1966) discussed how a row of American owner occupied houses was very difficult to sell because it was built in the same style as public rented houses in the area. In the UK former council homes may be difficult to sell despite being structurally sound.

Owner occupation is associated, in people's minds, with successful people. In Forrest and Murie's study there was a strong belief that success in life and home ownership were linked. Prestige related reasons to buy a council home tended to be less important but they were still mentioned. Living in low prestige housing can affect outsiders' views. Public housing is also stigmatised intentionally or unintentionally by planning decisions.

Finance and family: relationships with tenure

In these studies financial benefits of home ownership such as mortgages being cheaper in the long run than renting and ownership being an investment (see table

3.5) are often mentioned. It is not clear into which of three components (of protection, autonomy and prestige) financial benefits would best fit. In some ways they are protective as they may make escape easier or provide more options; more choices also imply a person has more autonomy. Financial benefits may provide more prestige. Family and relationships were also of most crucial importance. By far the largest category under the meaning of home found in Saunders study was to do with family and relationships. Again these do not neatly fit into any of three components but may relate to more than one. A family can make one feel protected and can provide help and support, or they may provide prestige.

Summary of the chapter

In this chapter I have explored the concept of ontological security through examining similar concepts such as *sense of coherence*. I have operationalised the concept in terms of protection, autonomy and prestige for this study. I have shown how ontological security may be linked to health and housing. I have described the debate as to whether ontological security may be linked to home ownership as opposed to renting through studies of ontological security and housing tenure and through studies concerning the three components. I am now in a position to discuss the aims of the study.

3.5 Aims of the study

I will summarise the literature reviewed above in order to establish the aims of this study before describing these aims and the ways in which they will be met.

There is a well established, observed empirical link between home ownership and health. Specific problems in the rented sector such as a higher prevalence of damp housing could be an explanation for the relationship. However it is very difficult to untangle physical and psychological effects. Insecurity is a psychological concept that has appeared in several guises in the literature, with many indications that it may link to poor health. The way that insecurity may have important implications for health, suggests it may be a very deep rooted quality that relates to the very core of being thus in this study the term 'ontological security' will be used. Certain conditions in life may promote ontological security whereas others may promote insecurity. It has been debated whether inhabiting an owner occupied dwelling may

promote ontological security or living in a rented dwelling may promote insecurity; no final conclusions have been drawn.

This thesis will attempt to look at whether ontological security may be a possible link between home ownership and health by meeting the following aims through the means suggested:

1. To see whether ontological security from the home does appear to have three components of protection, autonomy and prestige
    - Through devising a scale to measure ontological security from the home through components of protection, autonomy and prestige
    - Through factor analysis of the scale to examine their psychometric properties
2. To see how closely ontological security from the home is related to tenure
    - Through including the scale in a postal survey of a random sample of adults in the West of Scotland which will also include measures of demographic, socio-economic and psychological characteristics; housing and area conditions, transport use and health and wellbeing
    - Through analysis of whether tenure is a good predictor of ontological security from the home or whether other sociodemographic or housing variables are better
3. To see whether ontological security appears to play any role in the pathway between housing tenure and health
    - Through analysis of which concepts in the questionnaire, including ontological security, best explain the relationship between tenure and health

Chapter 4 Design and methods

In this chapter I discuss the postal questionnaire that provided the data for this thesis. I describe how the sample was designed, how the questionnaire was formatted and how particular questions in the questionnaire were chosen or developed, and finally the procedures followed in conducting the survey.

4.1 The design of the study

In this section I describe why a postal survey was chosen for the study, how the sampling frame for the study was chosen and why CACI Ltd provided the sample.

The ESRC project was planned as a postal survey followed up by qualitative interviews prior to myself joining the research project. Postal surveys generally enable larger and random samples of potential respondents, over a wider area, to be contacted for less expense and in a shorter time period. Power calculations suggested that 2000 cases were needed to detect significant tenure differences in health after controls. This was too many for a face to face survey in the time allotted (Macintyre, Ellaway et al. 1996). However a postal survey was useful as a research methodology for the topic of ontological security, housing tenure and health. Most studies of ontological security have been qualitative and/or based on small samples. I therefore chose to use the postal survey for my doctoral research as a contrast to previous studies. One aim of my research was to develop a scale to measure ontological security rather than relying on nebulous interviewees' comments. Through a postal survey a scale could be tested on a large sample. Particular weaknesses of postal surveys are lower response rates than with face to face contact and that those with reading difficulties may struggle to complete them. To attempt to address these concerns I used Dillman's (1978) Total Design Method, which seeks to raise the response rate through the layout of the questionnaire and several follow up letters to response rate, and used simple language throughout the questionnaire. Thus the weaknesses of postal surveys, I hoped, could be somewhat overcome.

Funding constraints meant that the survey was to be confined to the Glasgow area. This area of Scotland is socially heterogeneous. In the 1991 census owner occupation varied from 73.8% in Eastwood to 45.2% in Glasgow City. Rates of illness also differ markedly. In Eastwood 6.7% of the population reported limiting long term illness compared with 13.5% in Glasgow city. Thus the types of people and areas found more generally in the UK are represented. The area does not differ significantly from elsewhere in the UK when modelling 1991 census tenure, car ownership and LLTI data (Macintyre, Ellaway et al. 1996).

It was initially thought that the Central Clydeside Conurbation would be the sampling frame. However the Central Clydeside Conurbation has not been used for planning purposes after the Local Government reorganisation of 1996. The new planning unit is the Glasgow and Clyde Valley Structure Plan. Structure plans are mandatory large-scale policies which last over a decade. The policies relate to housing and transport as well as employment, industry, shopping, education, social and community services, recreation and leisure, conservation and utility services (Reeves 1996). The Glasgow and Clyde Valley Structure Plan consists of eight councils formed in 1996: Glasgow City, East Dunbartonshire, West Dunbartonshire, East Renfrewshire, Renfrewshire, North Lanarkshire, South Lanarkshire and Inverclyde.

The sampling frame needed to provide a cross section of the types of area and then of people within the selected areas. Initially a two stage sampling procedure was discussed. The first stage would be to select areas within the Glasgow and Clyde Valley Structure Plan using an area classification and the second stage would be to draw a random sample of individuals within each area from an individual sampling frame. An extensive review of area relevant sampling frames was undertaken (see Hiscock (1997) for a summary of frames considered and Appendix 1).

CACI Ltd. was chosen to provide the sample because their geodemographic classification, Scottish*ACORN (A Classification Of Residential Neighbourhoods), has special relevance for Scotland; they use possibly the optimum sampling frame for individuals, an electoral register which is updated quarterly, trapping an

estimated 7% of movers; it is possible to use a one stage sample, which increases the power of the study, and they draw the sample themselves freeing me to concentrate on the literature review. This is despite CACI Ltd. being an expensive option. The eight Scottish*ACORN categories are shown in table 4.1. These refer to particular Scottish features such as 'tenements'. These groups can be further divided into 43 types for further discrimination.

Table 4.1 Scottish*Acorn Groups

Scottish*ACORN Groups		
A. Affluent consumers with large houses	D. Private tenements and flats	G. Council estates, older residents
B. Prosperous home owners	E. Better off council areas, homes often purchased	H. Poorest council estates
C. Agricultural communities	F. Council estates, less well off families	

How the sample was drawn by CACI Ltd.

The sample consisted of individuals from the Glasgow and Clyde Valley Structure Plan area. Within this area postcodes were included if their centroid (highest population density) fell inside the boundaries of Glasgow and Clyde Valley. The individuals were selected from the enhanced electoral register produced by CACI Ltd.. The electoral register includes 17 year olds with their date of birth. As only adults were required, under 18s were excluded using their date of birth information. The sample was stratified by ACORN type. The proportions of each ACORN type in the sample were similar to the proportion in the population.

Three samples were drawn. The first was a pilot sample of 500 individuals and the second was a sample of 4500 for the main study. These were drawn from the electoral register compiled in October 1995 because the 1996 register was not available to CACI Ltd. until later. The long time lapse was apparently due to the need to process large amounts of data. The low response to the pilot (N=170) suggested that an extra 2000 names would be necessary, which would increase the sample size to 6500. This third sample was drawn from the 1996 register which had by then come on line. CACI Ltd. were able to check that there were no overlaps between the samples.

The list of sampled individuals was supplied on sticky labels, ready to put on correspondence, and also on disk. The database provided name, address, postcode and ACORN category for every individual.

For the first two samples the costs were a setting up charge of £1100, a charge of £75 for every 1000 names and a charge of £5 for printing sticky labels for every 1000 names. This totalled £1500 in all. For the third sample CACI Ltd. charged £500 for the names and bringing the sampling frame back from storage.

Qualitative interviews

To complement the survey data another researcher and I conducted qualitative interviews, with 43 postal survey respondents, in February to May 1999. Half were social renters and half were owner occupiers. The respondents came from a variety of socio-economic backgrounds, age groups and areas. Questions covered experiences of housing and opinions of housing tenure, transport and health. Reporting these interviews fully is outwith the scope of this PhD but some use of this information is made in chapter 8 (for more information see Hiscock, Kearns et al. (2001), Hiscock, Macintyre et al. (in press) and Appendix 2).

4.2. Development of the questionnaire

In this section I describe the process by which the questionnaire was developed. I describe who informed the decisions as to which questions were useful and how easy they were to complete, the pilot questionnaire and how the logo was chosen. I describe the layout of the questionnaire and the format of the questions. I also detail the sources of the questions. A copy of the questionnaire is in Appendix 3.

The layout and questions were informed by discussion with other researchers and staff. Five members of a housing co-operative also saw an early version of the housing section. A focus group of car owners and non car owners completed an early version of the transport section. These two groups also provided ideas about suitable questions. Additionally two younger people living with their parents filled in the pilot questionnaire, before it was finalised, to see if the questionnaire was

suitable for people other than householders and their partners. Thus a range of people with a variety of abilities and experiences saw the questionnaire.

It was decided to carry out a pilot of the questionnaire to test the questions in a general population sample and to determine the sort of response rate that would be obtained for this sort of questionnaire. In a review of pilot questionnaires, Reynolds et al. conclude that pretesting is helpful to "refine the questionnaire design and identify errors in the questionnaire which may only be apparent to the population concerned" (Reynolds, Diamantopoulos et al. 1993:171).

The survey was titled 'Transport, Housing and Wellbeing' for the following reasons. It was called 'transport' as if the study was titled car ownership then non car owners could assume that did not apply to them; 'housing' because other questions besides tenure were asked about housing; and "wellbeing" because the study considered mental as well as physical aspects of health. A cartoon snail was chosen as the logo because it consisted of a cartoon generic house (for housing) a foot (for transport) and a smile (for well-being). The eventual layout is discussed below.

The layout

In this section I describe how the decisions about the format of the questionnaire and the questions within it were decided.

The cover of the questionnaire was white card. White was chosen as it distinguished the questionnaire from other questionnaires produced by the unit. It included the University of Glasgow crest to remind people that the study was academic and was not a commercial study, as commercial studies tend to achieve lower response rates. The University of Glasgow rather than the Medical Research Council (MRC) was highlighted because previous survey experience suggested that local respondents were much more likely to have heard of the University of Glasgow rather than the MRC. The University of Glasgow is local to the sample whereas the MRC is London based. A local focus was hoped to increase response rate as respondents might identify more with a local institution. The cover also included the study title and logo.

Questions were in bold font to stand out and instructions were in italics. Parts of the italic instructions were written in capitals to differentiate different types of questions and to improve the quality of the answers provided by respondents. The layout was similar to other questionnaires used in the MRC Medical Sociology Unit which had achieved good response rates. It was decided not to use colour in order to keep printing costs down.

The responses were formatted as tick boxes rather than circling numbers because I explored the possibility of scanning the questionnaire rather than manual data entry. Eventually it was decided that scanning was going to be much more expensive than manual data entry. The charges for 4000 returns by a data entry company that could do scanning or conventional data entry are shown in table 4.2:

Table 4.2 Comparison of prices of the Scanning and Conventional data entry methods

	Scanning	Conventional
set up charge	£4200	£500
data input	£1150	£4440
total	£5350 + VAT	£4940 + VAT

For 4000 returns scanning costs more than conventional data entry, however if the numbers are lower than 4000 then the price for scanning per questionnaire rises whereas for conventional data entry, it decreases. As I was unlikely to achieve 4000 questionnaires then the difference would be much larger. However by this stage the pilot questionnaire was already completed in a scannable format. The tick boxes were still retained in the final questionnaire because I thought that they looked clearer and neater than circled numbers when a tick box and a circling number version were compared. The tick boxes went across the page rather than down the page to save space.

I aimed to keep the questionnaire as short as possible so that respondents would be more likely to complete it and to do so properly. This meant that I tried to use the shortest version of each question while also keeping an attractive appearance. I

experimented with columns to save space but these made the page look cluttered and so I abandoned the idea of columns. For the same reason an Arial size 10 font was chosen which looks friendly but is small. The pilot questionnaire had 44 pages (including 2 blank sides and the cover). This was too long because it pushed up postage costs and made the questionnaire appear daunting to fill in. The final version had 28 pages (including the cover). Space was saved by the questionnaire not being scanned (as the boxes could thus be closer together), and not dividing the sections into subsections. It took 30 minutes on average to answer all the questions.

There was much missing data in the pilot. To reduce missing data various steps were taken. Each new section started on a new page and no questions went over a page (except the question about the cars owned, which was placed so that the parts of the question were on facing pages). Where there were long sets of statements to be responded to, gaps were left between every 3 to 5 statements so that respondents would be less likely to miss statements. Page numbers were made prominent and pages were numbered across the whole of the questionnaire not within each section. Routing (directing respondents to miss out some questions) was also made more prominent by using a large font.

A footer "confidential" was added to each page to reassure respondents so they would be more likely to answer finance and other personal questions and so reduce missing data from this source. A message of confidentiality was included on the cover so that respondents should feel assured that the information they provided would be kept private. A similar message had been used on the MRC Work and Health Study self complete postal questionnaire (the MRC Work and health study involved a questionnaire distributed to employees in a university and a bank to determine occupational effects on health with a particular focus on gender (Emslie 1997)).

The inside cover consisted of three examples of how to answer questions. The font in this page was larger than the rest of the questionnaire to look friendly and important to read and to distinguish it from the questions so that respondents would be less likely to waste time and effort trying to fill them in. The inside back cover

was based on the MRC Work and Health Study postal questionnaire and it allowed space for respondents to provide any other information that they thought was important. It also thanked the respondents, asked them to check back to see if there were any parts that they had missed, and reminded them to return the questionnaire. This was all in a larger font for emphasis.

The questions

The questionnaire was divided into eight sections, 'about you' to extract basic information such as age and sex, 'your health and well-being,' 'your home', 'your transport', 'your household', 'work' so respondents could be classified by social class, 'money matters' and 'lifestyles' which mainly covered health behaviours. Bourque and Fielder (1995) recommend that postal survey questions should refer to the present rather than the past or future, they should be able to be answered by all respondents and that routing should be avoided as much as possible. I therefore tried to minimise routing and to ask questions about current status rather than a detailed history of respondents' housing. I used simple language where possible so that the questionnaire would be suitable for the majority of the population.

The questions chosen were mainly from other questionnaires (and where possible from self complete questionnaires) so that I knew they had been tried and tested. Many questions were previously included in Twenty-07 questionnaires. The Twenty-07 survey is a longitudinal health project conducted in the West of Scotland by researchers based at the MRC Medical Sociology Unit (now the MRC Social and Pubic Health Sciences Unit) in Glasgow (Macintyre 1987; Macintyre, Annandale et al. 1989). The current study was intended in part to replicate in more detail previous analyses of the Twenty-07 study (Macintyre, Ellaway et al. 1998) so it seemed sensible to use similar questions. Some questions were taken from the MRC Work and Health study which used a recent postal questionnaire (Emslie 1997). Some housing questions were drawn from the Scottish Housing Conditions Survey (Scottish Homes 1997). Other questions were from the General Household Survey (GHS) (Thomas, Goddard et al. 1994) and from the Health and Lifestyles Survey (HALS) another large UK survey (Cox, Blaxter et al. 1987; Blaxter 1990). The 1991 census (ONS 1991a) and 2001 census test (Wallace 1996) were also used as a source

of questions. This census test was carried out in some areas of Glasgow in 1997. Another advantage of using questions from these sources is that our survey can be compared with others. This is useful to check for possible anomalous results. To facilitate comparison I also used versions provided by the harmonised government survey questions (GSS 1995; GSS 1996) where possible.

In the next sections I discuss how key concepts in the questionnaire were chosen or developed.

4.3 The classification of housing tenures

Eventually tenure (q17) was divided into eight categories: rented from the council; rented from Scottish Homes; rented from a housing association, cooperative or charitable trust; rented from a private landlord or letting agency; being bought with a mortgage; owned outright; partly bought and partly rented (shared ownership) and something else.

The census version of housing tenure that was piloted had problems. Young people wrote 'live with parents' rather than specifying a tenure. The wording was amended to make it clearer that the household tenure was required rather than the individual respondent's situation. The minor category of 'renting from a friend or relative' was also removed, as there was the possibility of confusion with one's own position and the household's tenure. The 'rent free' category was removed because pilot respondents on housing benefit had ticked 'rent free' when they probably should have ticked 'renting'.

The 'rented from employer' category was also a problem because pilot respondents sometimes ticked rented from the council and rented from employer. Possibly they worked for the council. Rather than lose data I removed this category. I anticipated that respondents renting from an employer should use the 'something else' category. Some may however have used the private renting category.

4.4 The choice of health measures

In this section I describe how each health question included in the questionnaire was chosen. The first question in the questionnaire was self assessed general health over

the last year. This question was included as a global perception of health. It was based on the GHS version (Thomas, Goddard et al. 1994). Leavey and Wilkin (1988) compared the results using this question with results using the Nottingham Health Profile (NHP) in an interview survey of around 2000 adults in Manchester. The NHP consists of 38 statements related to six health topics: energy, sleep, emotion, pain, mobility, and social isolation. Its length means that it is inappropriate for many questionnaires and Leavey and Wilkin found that some respondents had difficulty completing it. This implies that it would be inappropriate for a postal survey. Self assessed general health was most highly associated with the energy component. The weakest association was with social isolation. The responses have been modified from 'fairly good', 'good' and 'not good' by researchers working on the Twenty-07 study and by researchers on the Health and Lifestyle Survey (Cox, Blaxter et al. 1987). This was because respondents had complained that they needed to be able to say their health was 'excellent'. This four response version was used in the questionnaire.

GP consultations (q3) is another global measure of health but uses a behavioural (number of visits) rather than subjective index (feelings about health). A similar question has been asked in the GHS (Thomas, Goddard et al. 1994), the National Morbidity Survey (Carr-Hill, Rice et al. 1996) and the Twenty-07 study (Macintyre and Sooman 1991). Twenty-07 questionnaires differentiated between doctors' visits to the home and patients' visits to the surgery and/or asked about hospital visits. I used the simplest form of this question, however, for simplicity and to save space. People may visit their doctor for contraception, or cancer screening so a consultation does not necessarily indicate poor health. However by asking about visits 'on your own behalf' respondents should not have included visits where they were taking their children.

The long standing illness question (q9) was used in a Twenty-07 self complete questionnaire and is the GHS rather than the census version. Its meaning has been unpacked by Twenty-07 researchers and it was found that less than 10% of the illnesses described were mental illnesses (Macintyre, Ford et al. 1999). Leavey and Wilkin (1988) also compared the GHS long standing illness (LSI) and limiting long

standing illness (LLSI) to the NHP. LSI was more highly associated with sleep, pain and mobility than self assessed general health. LLSI was more highly associated with pain and mobility than were LSI or self assessed general health. This again suggests that LLSI may be measuring physical health more than mental health. Cohen, Forbes et al. (1995) compared the census version of limiting long term illness (LLTI) and Short Form 36 (SF36). With 12 questions this scale was again considered to be too long for our study. LLTI was similarly more closely related to physical health (physical functioning and physical role limitation) than mental health or vitality.

The symptoms checklist (q10) is a mixture of malaise and physical symptoms. It was used in Twenty-07 and HALS (Blaxter 1990). The format was different from other self complete questionnaires as ticking boxes was used rather than circling 'yes' or 'no' as it was less daunting and took up less space.

The Hospital Anxiety and Depression Scale (HADS) (q11) (Zigmond and Snaith 1976) was preferred to the General Health Questionnaire (GHQ) as a measure of mental health for two reasons. Firstly anxiety and depression can be distinguished. Secondly the scale was devised so as not to refer to somatic sensations. This enables the scale to measure mental not physical problems. The example provided was taken from Twenty-07 self complete questionnaires (Dunbar, Ford et al. 2000).

4.5 The choice of psychological characteristics scales

In the literature review I described why I thought that ontological security might be part of the pathway between housing tenure and health. To test this hypothesis I compare ontological security with other psychological concepts to see whether ontological security added anything distinctive to the prediction of health.

Four psychological concepts, other than ontological security, were considered that could intervene in the relationship between housing tenure and health: self esteem, mastery, self efficacy and locus of control. I realised that there would not be sufficient space to include all of them in a postal questionnaire so I needed to find which would be the most useful. To choose the scales it was necessary to do two

interlinked things: firstly to establish which concepts were most important to measure and secondly to find a scale that would successfully measure the concept. A good starting point for this would be to define the concepts.

Definitions of the concepts

Unfortunately I found that often a concept was defined in terms of another concept. Palenzuela (1984) for example noted that the locus of control had been defined in different ways by different investigators and has been used analogously with attribution, self efficacy, perceived competence, personal helplessness, perceived control and powerlessness. Also the concepts were sometimes defined as a component of another concept. For example Pearlin and Schooler (1978) saw self esteem, mastery and self denigration as part of efficacy. This could suggest that all scales are measuring the same concept. However by examining the literature closely some differences were apparent.

Self esteem is to do with feelings about the self. Rosenberg et al. saw global self esteem as the "individual's positive or negative attitude towards the self as a totality" (Rosenberg, Schooler et al. 1995:141) and Sherer and Maddux stated that "self esteem represents an attitude about one's self worth" (Sherer and Maddux 1982:667). Similarly Dew et al. explained self esteem as "feelings of self worth" (Dew, Simmons et al. 1994:934). Therefore self esteem is about whether respondents see themselves as having worth.

Self efficacy, locus of control and mastery, on the other hand are all about how much a person is in control: mastery has been defined as "the extent to which one regard's one's life chances as being under one's own control in contrast to being fatalistically ruled" (Pearlin and Schooler 1978) or "internal control" (Smits, Deeg et al. 1995:238). Self efficacy is also described as:

> "Optimistic self beliefs about dealing with critical demands that tax an individual's resources. If one feels confident enough to be able to control challenges or threats then successful action is more likely."
> (Schwarzer 1992:v)

Another definition of self efficacy is the degree to which individuals felt they could control things that happen to them (Dew, Simmons et al. 1994). These concepts appear to assess the extent to which a person feels in control.

As well as being to do with control, mastery, self efficacy and locus of control are all seen as "agency measures" (Lennings 1994:746). Therefore "self efficacy expectancies determine the initial decision to perform a behaviour, the effort expended and the persistence in the face of adversity" (Sherer and Maddux 1982:663). The amount of control one has, it is argued, determines one's actions.

Attempts to separate out these three closely linked concepts have been made. Smits et al. suggest that mastery is:

> "A general control concept [whereas self efficacy refers to the] expectancy that one is able to execute a particular action which is thought to lead to a desired outcome." (Smits, Deeg et al. 1995:248)

These researchers see self efficacy as being more specific than mastery. However as the self efficacy scale they use refers to all situations it is hard to see how it can truly be specific. Mastery and self efficacy have also been seen as interrelated: past success (mastery) leads to expectations of success (self efficacy) which lead to success (mastery) leading to expectations of success (self efficacy) and so on (Sherer and Maddux 1982). However the contents of mastery scales suggest mastery too is about future success. For example one item in the Pearlin mastery scale is: 'What happens to me in the future mostly depends on me'. This refers to future rather than past success. This implies that not all researchers follow the same definitions.

However there is an alternative definition of self efficacy. Self efficacy sometimes refers to whether a person thinks they can perform specific behaviours. This was Bandura's original definition. Bandura saw self efficacy as "beliefs in one's capabilities to organise and execute the courses of action required to produce given attainments" (Bandura 1997:3). Bandura argues against "vague global measures" (Bandura 1997:38) of self efficacy. This definition of self efficacy is similar to the concept of specific self esteem (Rosenberg, Schooler et al. 1995) because self efficacy should only refer to one domain, for example one's career or one's health.

However, this definition, and ensuing specific scales, have less relevance for this study because I am looking for measures of general characteristics rather than specific behaviours.

This section has shown that there are two main ideas behind the concepts. One is concerned with self worth and the other is concerned with control over one's life. Both these concepts are of value for the current study. Having one's own home may well be related to one's feelings of self worth and one's feelings of control. The next section explains why each of the four concepts were included or not in the pilot and final version of the questionnaire.

Why psychological concepts were selected or rejected for use in the study and why particular scales were chosen to measure them

The psychological characteristics included had to be measured through scales that had been previously validated and also to be shown to be related to the concepts in the questionnaire such as health. They also needed to be accomplishing something different from other scales that were included.

Self esteem

Rosenberg's self esteem scale is commonly used and has been well validated. The scale has a unidimensional nature, which strengthens its power (Shevlin, Bunting et al. 1995). It has been found to have reliability coefficients (alphas) of .86 (Dew, Simmons et al. 1994) and .91 (Roberts, Dunkle et al. 1994).

Self esteem appears to be related to health (Rosenberg, Schooler et al. 1995). Low self esteem, for example, was associated with more anxiety and depression symptoms in American adult transplant patients in a longitudinal follow up study after transplants (Dew, Simmons et al. 1994). It must be noted, however, that not all studies have found a significant relationship between self esteem and health. Self esteem was not found to be related to alcohol dependence in 2163 fraternal female twins (Prescott, Neale et al. 1997) and was not found to attenuate the effects of life events on mental health (Roberts, Dunkle et al. 1994). However the authors suggested that the sample size was insufficient to show an effect. Additionally the

items were arranged in a Guttman scale rather than their usual format and only 5 items were used. These factors may have reduced the usefulness of the scale on this occasion.

Rosenberg, Schooler et al. (1995) found that global self esteem is less related to behaviour than specific self esteem (global self esteem is general feelings whereas specific self esteem is feelings about the self in relation to a particular issue. In this study, I was interested in a measure of global self esteem). They conclude that: "in general [global] self esteem has not proved to be an impressive predictor of behavioural outcomes" (Rosenberg, Schooler et al. 1995:144). Their findings suggested that global self esteem was more related to health whereas specific self esteem was more related to behaviour. This was why they felt that in a review of many studies using Rosenberg's self esteem scale "sociodemographic variables show no better than modest success in predicting self esteem" (Rosenberg, Schooler et al. 1995:144).

Rosenberg's self esteem scale was deployed in the pilot and final versions of the questionnaire[1]. I used the version in the Twenty 07 study rather than the modified simpler version of the Rosenberg scale used in some MRC studies (Warr and Jackson 1983), so that the results would be directly comparable with Twenty 07. The simpler version had been used in a study of ethnic minorities whereas this study has a general population sample.

[1] Researchers working on the Twenty-07 study added four extra self esteem items. These were included in the questionnaire for comparison purposes.

Locus of control

Rotter's original locus of control measure was very well validated but has about 30 questions which would be too long for a postal questionnaire that has to cover many topics. Shorter versions do not appear to be so valid and reliable. Sapp and Harrod (1993) compared two versions. They tested Lumpkin's (1985) brief version of Rotter's locus of control. They found that there were low reliability coefficients (.34 to .55) and the path model did not fit the data satisfactorily. They also tested a brief version of Levenson's (1974) locus of control scale. They found the construct validity was supported using second order factor analysis and had good predictive validity. However Richards (1983) tested Levenson et al's 1978 version and did not find a strong relationship between locus of control and goal attainment. In this study I was looking for a measure that should correspond with attainment, as home ownership may be viewed as a goal, so Richard's findings imply the utility of locus of control in this study may be low.

Similarly in an American study of alcohol dependency in 2163 fraternal female twins locus of control did not explain much variance (Prescott, Neale et al. 1997). The measure used was the learned resourcefulness subscale from the attributional style questionnaire (Peterson, Semmel et al. 1982). Therefore in health related studies locus of control scales do not seem to be very useful. I did not look at scales designed specifically to examine the health locus of control because I wanted a scale that was more general.

Locus of control is perhaps becoming out of date. Some results suggest that self efficacy surpasses locus of control:

> "An internal locus of control is inadequate to ensure an individual's belief in the ability to control ones chances of success or failure in a given area. The individual must also have had some success experiences from which to introject beliefs of self efficacy." (Sherer and Maddux 1982:670)

Therefore I decided to exclude locus of control scales in favour of the other control concepts.

Self efficacy

Self efficacy has the most varied definition and seems to overlap with all the other concepts and so it is difficult to know what it is measuring. Many researchers appear to develop their own measure for their particularly study (e.g. Grembowski, Patrick et al. 1993). The many existing self efficacy measures are problematic in that they appear to be fairly lengthy and would use up valuable space in a postal questionnaire. Additionally their validity is debated in the literature. Three well known scales are Tipton and Worthington (1984), Schwarzer (1992) and Sherer's General Self Efficacy Scale (Sherer and Maddux 1982). I will now discuss each of these scales.

Tipton and Worthington's original measure had 25 items and had a Cronbach alpha of .83. Lennings (1994) reported that his briefer ten item version had good test-retest reliability (.87) and a cronbach alpha of .77. The scale also related to goal achievement: the scale "reliably predicted the extent to which individuals persevere on a psychomotor strength task" (Wang and Richarde 1988:534). There was also a positive correlation between a sense of efficacy and effort expenditure. One could hypothesise that renters lack of self efficacy may explain why they have not expended the effort necessary to purchase a home. However a psychomotor task and buying a house are very different. On the other hand the scale also "correlated with a goal attainment scale measuring perseverance for changing a problem behaviour (e.g. smoking or excessive eating)" (Wang and Richarde 1988:534) and was inversely related to Rotter's introversion and extroversion (I-E) scale and Beck's hopelessness scale which suggests the scale measures something that relates to mental health. Wang and Richarde found that prediction from the scale was best with unfamiliar tasks in unfamiliar settings. This could explain why people who are unfamiliar with home ownership and have low self efficacy, because they are not home owners, do not become home owners.

There were also several occasions when the scale failed to find what was expected. Lennings (1994) reports that the scale did not predict career attitude in 400 high school students and that although it predicted goal setting it explained very little variance. Lennings argues that his findings suggested that the concept of self

efficacy was inadequately measured using Tipton and Worthington's scale. He suggests they only measure endurance or persistence behaviours rather than:

> "A broader concept... related to a sense of overall mastery of behaviour and coping skills as well as persistence... as defined by Bandura 1977." (Lennings 1994:750)

He concludes that "Bandura's skepticism about the construction of generalised measures of self efficacy was warranted" (Lennings 1994:750). The scale does not appear to be tapping into a general concept but rather into specific ones. Therefore it was decided not to use Tipton and Worthington's scale in this study.

Schwarzer (1992) has also developed a general self efficacy scale. Although his booklet stated that it was valid and reliable with German samples and had been used in English samples, it was unclear how much validation had been done with English samples. The 10 items tended to use more complex language which I wished to avoid to maximise the number of people who would be able to answer it accurately. For example item 5 is 'thanks to my resourcefulness, I know how to handle unforeseen situations'. The complexity could be the result of the original scale being constructed in German. I therefore decided not to use this scale.

Sherer's General Self Efficacy scale has seventeen items. Sherer and Maddux validated the scale in three ways. Firstly it had a cronbach alpha of .82; secondly it had construct validity by its similarities with Rotter's locus of control scale and Rosenberg's self esteem scale; thirdly it has criterion validity as it reliably predicted past success in vocational, educational and military goals in 150 American military veterans being treated for alcoholism (Sherer and Maddux 1982; Sherer 1990).

This scale also translated well into Hebrew; with four items added it achieved a cronbach alpha of .89 with 45 management students. Therefore it seems to be measuring something cross cultural. Unemployed Hebrew vocational workers who had higher self efficacy and those whose self efficacy was raised by a workshop were more likely to find jobs. There were 32 experimental subjects and 34 controls. Therefore the scale does seem to predict behaviour (Eden and Aviram 1993).

However the scale did not correlate with any measure of wellbeing in an elderly Dutch sample (Smits, Deeg et al. 1995).

Another concern is the overlap between self efficacy and self esteem. In pilot work for the Hebrew study, the general self efficacy scale and Rosenberg's (1965) self esteem scale, were found to:

> "Lack discriminant validity... [The] correlation...[between them] on three occasions ranged between .75 and .91. Thus each of the variables can serve as a proxy for the other." (Eden and Aviram 1993:353)

Therefore if these two scales were included in the study they could be measuring the same thing twice. However Sherer and Maddux (1982) only found "moderate" (667) correlations between the two. Therefore a self efficacy scale should only be used if it was widely separated from a self esteem scale. To summarise, none of the self efficacy scales seem particularly appropriate for this study.

Mastery

The Pearlin mastery scale was selected as a promising candidate for the questionnaire. Firstly it seemed to be the main mastery scale with the majority of studies using it rather than making up their own scale (unlike self efficacy). Secondly the Pearlin scale has been used in the United States (Roberts 1994; Bell, Schwartz et al. 1994; Dew, Simmons et al. 1994) and Europe (Penninx, Beekman et al. 1996; Smits, Deeg et al. 1995) so it appears to translate between different western cultures.

In the studies that have been examined it appears to be related to health. Rosenfield (1992) found that the Pearlin mastery scale mediated wellbeing as did Smits, Deeg et al. (1995) in their sample of elderly people. Dew, Simmons et al. (1994) studied 58 American adult transplant patients in a longitudinal follow up study after transplant. Patients with a poor sense of mastery (those scoring in the lower half or the distribution) were likely to have higher non abating anxiety and depression symptoms. In an earlier study, Dew et al. found that mastery promoted mental health of HIV positive haemophiliacs (Dew, Simmons et al. 1994). Bell, Schwartz et al. (1994) found that low mastery related to shyness in 783 American students; Bell's earlier work suggests that shyness is related to poor mental health. Dutch studies

have shown a link between mastery and chronic diseases in elderly people (Penninx, Beekman et al. 1996).

Prescott, Neale et al. (1997) used the powerlessness subscale from the Maddi, Kobasa et al. (1979) alienation test, which was reverse scored, to measure mastery. High mastery, as measured by this scale, was related to alcohol dependence in a study of fraternal female twins. The authors suggest this may be because this scale was showing that they saw themselves as powerful rather than being in control (mastery). This therefore suggests that this scale is not measuring what it is supposed to measure. The Pearlin scale is therefore preferable.

Mastery is also related to socio-economic characteristics. Pearlin and Schooler (1978) found that mastery measured by their scale was related to low income and education in 2300 people in Chicago aged 18 to 65. The Pearlin scale also predicted housing satisfaction and was related to empowerment in a mentally ill group of respondents (Seilheimer and Doyal 1996). Therefore this scale is relevant to the sort of issues included in the survey.

The English version of the scale is only 7 items long which means that it is suitably short for a postal questionnaire. The Dutch version was even shorter being 5 items. The scale also seems to be technically valid. Cronbach alphas have been reported of .82 (Seilheimer and Doyal 1996) .80 (Dew, Simmons et al. 1994) and .65 (Penninx, Beekman et al. 1996). Bell, Schwartz et al. (1994) did not report alpha coefficients but do report that the scale was reliable and valid.

However in a sample of 155 people of advanced years, with a mean age of 89, Roberts (1994) only obtained a Cronbach alpha of .35. The scale in this case had 3 factors and 2 with high cronbach alphas: perceived control of events and perceptions of global ability to perform. This suggests that the scale is not appropriate for very old people. However the sample for this study is a general population sample so it is not likely to be a problem for this study.

The problem with the scale is that Seilheimer and Doyal (1996) called the concept that they were measuring with the scale 'self efficacy' rather than mastery. Again this leads to the problem of whether the concepts can be separated. On the other hand it could be an advantage in that this scale unites the two concepts of self efficacy and mastery and so I am measuring the general idea of control. In this way the Pearlin measure can be seen as another self efficacy measure and perhaps a rather better measure than some of the aforementioned self efficacy measures.

Some of the items in Sherer et al's self efficacy questionnaire, however, seemed perhaps more focused than the Pearlin mastery scale and some of the items in the Pearlin scale were very similar to the Rosenberg scale. Also Smits, Deeg et al. (1995) who used Dutch versions of the Sherer et al. and Pearlin scales found that they were not correlated significantly suggesting that they were not measuring the same concept. Thus I decided to include both in the pilot questionnaire.

Both scales were answered satisfactorily in the pilot questionnaire. However I decided only to include the Pearlin mastery scale in the final version. This was because firstly the Pearlin scale was shorter and I was looking to save space. Secondly the concept of mastery is intended to measure a global concept. Bandura (1997), who developed the concept of self efficacy, argues that self efficacy is most useful when it is used as a measure of a specific domain. A further reason for including one scale in the final version is that Smits, Deeg et al. (1995) found, in an elderly sample, that the Dutch version of the Pearlin mastery scale correlated with wellbeing and positive affect whereas the Dutch version of Sherer et al's self efficacy scale did not. Finally one or two pilot respondents actually complained that they were being asked about the same topic twice. Therefore only the Pearlin mastery scale was used in the final version.

The scales chosen for the final version

The final version therefore contained two scales: Rosenberg's self esteem scale (q12) to measure the general idea of feeling good about oneself (self esteem) and Pearlin's mastery scale (q77) to measure the idea of feeling in control. The combination of these two was also used by Dew, Simmons et al. (1994) to measure self image. They

were placed in different sections of the questionnaire (self esteem with health measures and mastery with lifestyle behaviours), and at different ends of the questionnaire, to minimise the risk of the development of a response set.

4.6 The development of ontological security scales

In this section I discuss the background to the development of the ontological security scales. I also describe why each item was included. In section 3.1 I noted that ontological security could arise from many sources. In this study I am focussing simply on ontological security arising from housing. Thus I decided to develop an ontological security scale specific to the domain of housing.

General points about the scales.

This piece of work is concentrating on the relationship between housing tenure and health. When I was developing the ontological security scale I was also interested in the meaning of transport, so I developed equivalent scales for the home and for transport. However when devising the scales I realised that one scale for home and one scale for transport was not possible: all respondents had some sort of home but not all respondents had a car or used public transport. Generic items about people's transport did not sound sensible. Therefore, for the home, owners and renters could be compared on the same scale. For transport, however, scales were devised for public transport and for cars separately. The idea was then to compare the two. The questionnaire therefore contained three scales: one for home (q14), one for cars (q47) and one for public transport (q50). I have included the transport items in this section because they were integral to the way that the home scale was developed. Had I not been looking at transport too I may have included different items.

Derivation of the items

Dupuis and Thorns (1998) have defined four conditions of home life which if present will provide ontological security. I examined which components of ontological security (protection, autonomy and prestige) each condition addresses. I present the item used to tap this aspect and the equivalent items used to tap this aspect for car ownership and public transport in boxes.

Condition 1. "Home as a site of constancy in the social and material environment"

This first condition is part of the protection aspect because people often feel protected when they know their surroundings. This condition probably has less to do with tenure because mobility of owner occupiers and social renters (but not private renters) is similar (Pieda 1996). Moreover Greenwell and Bengston's (1997) study, in the United States, suggests that public renters are less likely to move area. However Dupuis and Thorns found that their sample of older home owners felt that a rented home was less likely to be a site of constancy because tenants were "subject to the whims of the landlord" (Dupuis and Thorns 1998:31). For a home to provide protection it needs to be a constant base. Therefore this condition for ontological security may relate to tenure.

The item in box 4.1 is intended to find out whether respondents are worried about eviction from their home. The item was devised so that it would cover tenants and owners. When considering transport it was thought likely that respondents would be more worried about time table changes than no longer having access to the car they used.

Box 4.1 Protection items from Dupuis and Thorns' first condition for ontological security

PROTECTION 1: HOME I worry about losing my home
PROTECTION 1: CAR I worry about the car or van I use having to be sold
PROTECTION 1: PT[2] I worry about bus/train services being changed or dropped

Condition 2. "Home as a spatial context in which the day to day routines of human existence are performed"

This section again refers to the home being somewhere familiar where people can follow routines. Giddens (1991) saw ontological security as stemming from routine. Dupuis and Thorns saw routine as "the predictability of daily life and the pattern of living and that are regularly followed" (Dupuis and Thorns 1998:33). Therefore for a home to provide ontological security, activities within it, they argue, need to be

[2] In the boxes 'PT' refers to an item used in the public transport scale

predictable. There have been arguments that homeowners, who have pressures to keep up mortgage payments, lead more routinised and stable lives than renters. For example they may join more organised activities whereas renters may be involved in less formal forms of socialising (Rohe and Stegman 1994b). Therefore this second aspect is likely to vary by tenure.

The item about the home asks whether people's home lives provide a sense of routine. It was felt that having a car could aid routine because people would not have to catch public transport at certain times and so be too early or late. Additionally with a car, routines may be less disastrously broken as cars can more often take an alternative route than a train or bus.

Box 4.2 The protection item from Dupuis and Thorns' second condition for ontological security

PROTECTION 2: HOME My home life has a sense of routine
PROTECTION 2: CAR Travelling by car or van fits in well with the routine of my daily life
PROTECTION 2: PT Public transport times fit in well with the routine of my daily life

However routine may not vary with home or car ownership. For example people could feel that because their own home is more their own territory than a rented home, they are freer to do as they please within it and so have less routine. Additionally they may have a wider variety of activities that they can do within their home, for example gardening or decorating, so their home lives could have more variety.

Public transport users may fit their lives around available public transport so that public transport does fit in with their routine. The effort of finding a lift for a non car owner could mean that cars do not fit with their routine. Therefore the routine aspect of ontological security may not map neatly onto tenure or car ownership boundaries. However Dupuis and Thorns stressed this aspect so it was included in the scale.

Condition 3. Home as a site where people feel most in control of their lives because they feel free from the surveillance that is part of the contemporary world

Dupuis and Thorns see the home as "a refuge from the outside world" (Dupuis and Thorns 1998:35). Their respondents felt they were able to hide from the world. For example:

> "A number of widows commented on the comfort having their own home gave them after their husbands' death. Home provided a refuge where they could go through the grief process in private." (Dupuis and Thorns 1998:36)

This is another aspect of protection. The items in box 4.3 each stress this ability to get away from the world. Similarly I felt people might see travelling as a way to take time out from the world. With cars people are alone whereas there are usually strangers in close proximity on public transport.

Box 4.3 Protection items from Dupuis and Thorns' third condition for ontological security

PROTECTION 3: HOME I feel I have privacy in my home
PROTECTION 3: CAR I feel I have privacy when I'm in a car or van
PROTECTION 3: PT I feel I have privacy when I travel by public transport
PROTECTION 4: HOME I feel I can get away from it all in my home
PROTECTION 4:CAR I feel I can get away from stresses when I travel by car or van
PROTECTION 4: PT I feel I can get away from stresses when I travel by public transport
PROTECTION 5: HOME I feel safe in my home
PROTECTION 5: CAR I feel safe when I travel by car or van
PROTECTION 5: PT I feel safe when I travel by public transport

This ability to shut out the world also provided "freedom" (Dupuis and Thorns 1998:36). This means that homeowners may have autonomy and be more able to personalise their world. Thus autonomy is also related to the Dupuis and Thorns' third condition for ontological security. Dupuis and Thorns mentioned that their respondents frequently discussed "'being able to do what you wanted when you

wanted'" (Dupuis and Thorns 1998:36). I felt this would make a suitable phrase for an item. The home is about staying still whereas transport is about moving to places. The equivalent transport items therefore referred to being able to travel freely.

Box 4.4 Autonomy item from Dupuis and Thorns' third condition for ontological security

AUTONOMY 1: HOME I can do what I want, when I want with my home
AUTONOMY 1: CAR I can travel where I want, when I want by car or van
AUTONOMY 1: PT I can travel where I want, when I want by public transport

Condition 4. Home as a secure base around which identities are constructed

Dupuis and Thorns argue that, "home ownership offer[s owners] the possibility of modifying their environment and thus stamping their personality on their home" (Dupuis and Thorns 1998:38). Therefore again Dupuis and Thorns are referring to autonomy. In this case rather than being able to hide themselves away to do their own thing, homeowners are actively creating their own personality. This aspect is covered in the item about being in control. I would also be able to compare feelings of control in the car compared to public transport.

Box 4.5 Autonomy item from Dupuis and Thorns' fourth condition for ontological security

AUTONOMY 2: HOME I feel in control of my home
AUTONOMY 2: CAR I feel in control when I travel by car or van
AUTONOMY 2: PT I feel in control when I use public transport

Dupuis and Thorns argue home ownership also adds to people's identity in a particular direction. Being a homeowner, their data suggested: "is looked on as an achievement and a source of pride" (Dupuis and Thorns 1998:37). Therefore this aspect also encompasses prestige. I developed two items relating to prestige. The first generally looks at whether respondents' home or transport makes them feel they have status. The second asks respondents to evaluate others' opinions of their home or transport.

Box 4.6 Prestige items from Dupuis and Thorns' fourth condition for ontological security

PRESTIGE 1: HOME My home makes me feel I'm doing well in life
PRESTIGE 1: CAR When I travel by car or van it makes me feel that I'm doing well in life
PRESTIGE 1: PT When I travel by public transport it makes me feel that I'm doing well in life
PRESTIGE 2: HOME Most people would like a home like mine
PRESTIGE 2: CAR Most people would like a car or van like the one I usually use
PRESTIGE 2: PT Most people would like to travel by the public transport that I use

Other items under consideration were discarded because they did not easily transfer between homes, cars and public transport. For example the item 'My home reflects my personality' was discarded because an equivalent item on public transport would be unlikely to make sense to respondents: it is impossible to personalise public transport (but travelling by bus could reflect and display 'green' credentials!)

The items of the scales were equivalent for housing, cars and public transport and there were nine items in each scale. The items were chosen theoretically, firstly from my ideas about ontological security relating to prestige, autonomy and protection and secondly from Dupuis and Thorns suggestions about the make up of ontological security. There were more protection items in the scale. This is intuitively sensible because Erikson suggests that feelings of protection or 'basic trust' are the first building block. The items were mixed so that they were not in the above order and the prestige, protection and autonomy items were separated to prevent design effects. Table 4.3 shows the order of the items in the questionnaire and the items' theoretical background.

Only one item was negative. Ideally I would have liked more of a mixture of positive and negative items but I found that turning items round did not work because the substituted word did not have exactly the same meaning. For example 'I feel scared in my home' is not the exact opposite of 'I feel safe in my home'. I

purposely avoided negative and positive words within one item (for instance 'I don't feel safe in my home') because they are more confusing for respondents.

In this section I have described how the ontological security scales were developed. In the remainder of this thesis I will focus on the ontological security from home scale. I now turn to the procedures followed in distributing the postal survey.

Box 4.7 Key to table 4.3

White=protection, light grey=autonomy, dark grey=prestige Roman numerals refer to the condition for ontological security with which the item is associated (from Dupuis and Thorns)

Table 4.3 The items for the ontological security questions

	Home	Car or van	Public transport
iii	1. I feel I have privacy in my home	1. I feel I have privacy when I'm in a car or van	1. I feel I have privacy when I travel by public transport
iii	2. I can get away from it all in my home	2. I feel I can get away from stresses as I travel by car or van	2. I feel I can get away from stresses when I travel by public transport
iii	3. I can do what I want, when I want with my home	3. I can travel where I want, when I want by car or van	3. I can travel where I want, when I want by public transport
iv	4. Most people would like a home like mine	4. Most people would like a car or van like the one that I usually use	4. Most people would like to travel by the public transport that I use
iv	5. I feel in control of my home	5. I feel in control when I travel by car or van	5. I feel in control when I use public transport
iii	6. I feel safe in my home	6. I feel safe when I travel by car or van	6. I feel safe when I travel by public transport
iv	7. My home makes me feel I'm doing well in life	7. When I travel by car or van it makes me feel I'm doing well in life	7. When I travel by public transport it makes me feel that I'm doing well in life
i	8. I worry about losing my home	8. I worry about the car or van I use having to be sold	8. I worry about bus/train services being changed or dropped
ii	9. My home life has a sense of routine	9. Travelling by car or van fits in well with the routine of my daily life	9. Public transport times fit in well with the routine of my daily life

4.7 Timetable and procedures

In this section I discuss ethical issues to do with the study, the procedures followed in data collection and the way that the data was prepared for analysis.

Before the study could begin, approval was sought and gained from the Glasgow University ethics committee. Even though the questionnaire was not designed to touch sensitive topics, such as personal relationships or illegal activities, we were collecting sensitive information about people's financial situation with questions on income and dependence on benefits for example. To reassure people, we did not ask people to write their name on the questionnaire and instead used an anonymous identification number and we included the footer 'confidential' on each page. Completed questionnaires were locked away every night and every time they were moved they were checked to minimise any security risks and also because the respondents had been assured that their information would be kept confidential. Another ethical dilemma that researchers have is that potential respondents must be allowed, and feel that they are allowed, to stop at any point but researchers wish to keep response rates high. Thus with postal surveys it is necessary to be very careful with the tone in letters to respondents. One reason that I chose to use the Total Design Method (see below) was to maximise response and minimise possible offence to respondents through using a tried and tested technique.

The survey used Dillman's (1978) Total Design Method (TDM) as a guide for the mailing procedure. Although it is now twenty years old its recommendations are similar to those given in more recent work (e.g. Bowling 1997). TDM involved four mailings. The first mailing is the original questionnaire, the second mailing is a postcard and the third and fourth mailings are a letter and a replacement questionnaire. The mailings used for this study are provided in Appendix 4.

The original mailing included the questionnaire; a covering letter; a prepaid return envelope (so that respondents would not have to waste time and money on a stamp, envelope and finding the right address) and a pen so that respondents could fill the questionnaire in without having to look for a pen. The idea of sending a pen was not

mentioned by Dillman but there were sufficient resources to include one. I received appreciative comments about the pen from pilot respondents.

The letter format provided the capacity to describe the survey's funders and the organisations to which the funding had been awarded (the MRC and the Centre for Housing Research and Urban Studies). I felt this information should be provided to respondents so that the project was accurately represented. The information was in a small italic font at the top of the page. To most respondents, this information would be irrelevant and could be off-putting if it was over emphasised. In the format used, the information was present but was not stressed. I considered including the snail logo in the letter heading but decided against this because the snail was a cartoon and I was worried that respondents might take this as an indication that the survey was not to be taken seriously.

Each letter was dated and included the individual's name and address. This was intended to make the letter more personalised so that respondents would feel more involvement in their questionnaire and also that they would be taken seriously and were paying attention to detail.

The first paragraph provided an explanation of the study and an immediate link to policy to show that the study intended to be 'useful'. With this paragraph I aimed to be as general as possible as this was a study of the general population. The second paragraph explained how the respondent was chosen. (In the pilot the electoral register was not mentioned in the covering letter and I received a number of phone calls asking how the names had been obtained so this information was included in subsequent letters).

An incentive of a prize draw for a £50 Marks and Spencers voucher was provided as respondents were kindly giving up their time while they filled in the questionnaire and posted it back. This prize was likely to have a very wide appeal; other prizes such as Champagne would not appeal to teetotallers and also as the return address was the Medical Research Council the questionnaire could not be seen to be promoting anything that had unhealthy connotations. On the other hand a very health

conscious prize such as leisure centre vouchers could put off some respondents! The sentence referring to the voucher was highlighted in bold font to be eye catching. In subsequent letters I changed the font to draw more attention to the incentive. In the covering letter I did not emphasise the prize draw too much because incentives may also have negative connotations: respondents can see incentives as a bribe for example. Moreover I wanted to distance the image of the questionnaire from that of commercial questionnaires (which more regularly include incentives (Bowling 1997)) to lessen the likelihood that respondents would dismiss the questionnaire as junk mail.

The third paragraph discussed confidentiality. It explained why the identification number was necessary. Otherwise respondents might think they were being identified so that they could be sent advertising later or that they would be monitored in future. The fourth paragraph provided contact information for any questions. This was intended to demonstrate that the survey was from an organisation open to communication and also it could be possible to convince some respondents to fill in the questionnaire through a personal conversation. In all the letters the respondent was thanked. The main grant holder of the project, Sally Macintyre, signed the letters. This was for two reasons. Firstly in previous surveys respondents had commented favourably about being written to by a professor and secondly Macintyre would be easily identified as a name from Scotland. As the majority of people in Glasgow and Clyde valley are Scots, Macintyre would be likely to be a name that respondents in general could identify with. In this way the covering letter fulfilled the requirements of a covering letter discussed by Bowling. These are:

> "The aim and sponsorship of the survey, emphasise the confidentiality of the results, how respondent names were obtained, the importance of their response and why a representative group is needed and how the results will be used." (Bowling 1997:234)

Bowling also recommends signing the letter personally and using a stamp rather than a franking machine. However this was not practical with 6500 questionnaires.

The postcard reminder was posted to arrive after one week. This was intended to jog people's memories. Dillman suggests that one week is suitable because it "conveys a

sense of importance. At the same time it does not sound impatient or unreasonable." (Dillman 1978:183). A postcard was used rather than a letter because it is cheaper and the respondent does not have to open an official looking envelope which they may well dispose of as junk mail.

The postcard was printed four times on an A4 sheet of white card. The sheets were then guillotined into four sections. Address labels, obtained from CACI Ltd., were then stuck onto each postcard before franking and collected by the Post Office.

The first paragraph aims to explain that a questionnaire was sent to the respondent and why. This is necessary because the respondent may not have received the questionnaire if, for example, it had been lost in the post or opened by another member of the family by mistake. Even if people do not contact the unit at this point they may be more receptive to completing the questionnaire when it arrives with the next reminder. The second paragraph is a thank you to respondents whose questionnaires had crossed the postcard reminder in the post and stressed that the questionnaire is of consequence. A contact name and number were supplied in the third paragraph for those who had lost or not received the original mailing.

The third mailing was a letter and a replacement questionnaire. The format of the letter was similar to the covering letter so that the respondent recognises it from the first mailing. The first paragraph had a more insistent tone than the previous mailings but is not too demanding because the respondent has already received two mailings. Dillman (1978) suggests that three weeks is a good time to send this reminder because responses to the postcard will have dwindled. Therefore the postcard and the third mailing are less likely to cross in the post.

The final mailing was seven weeks after the first mailing. Registered delivery was not used, as suggested by Dillman, to keep costs down and also because it might inconvenience respondents: Dillman mentioned studies where respondents had been angered by having to collect their questionnaire. I hoped that insistence would bring in results. I decided that any further follow ups would not be cost effective. Some

respondents had complained that the previous mailing was too insistent so the final mailing was much more friendly sounding.

Staff at the Medical Sociology Unit (including myself) filled the envelopes for the pilot questionnaire. Due to the large amount of work involved in the final version and because another postal questionnaire was also being sent out in the same period, a company that dealt with mail shots was contracted to deal with the first mailing of the final version of the questionnaire. The postcard reminder was simpler so was sent out from the Medical Sociology Unit. However matching up names of non respondents to questionnaire numbers was too complicated to be entrusted to the mail shot firm so students were employed to do this under the supervision of staff at the Medical Sociology Unit.

The final version of the questionnaire was first sent out on Monday 6th October 1997, the postcard reminder was sent out a week later on Monday 13th October (day 8). At this point several respondents telephoned complaining that the postcard had arrived very soon after the original questionnaire. Moreover all but one of the first questionnaires to be returned (between the 8th and 10th of October (days 3-5)) had identification numbers between 5300 and 6500. This suggested that the mailing company had not mailed all the questionnaires on the same day. Therefore the first follow up questionnaire was sent out two days later than the pilot on day 24 (Wednesday 29th October). There was a difference between the percentage returned in the pilot and the final version in this respect (see Macaulay 1998).

The pilot data were entered in house by clerical staff and myself. This was done in order to identify some of the pitfalls of the pilot questions and layout and also because the numbers returned did not justify using a data entry company. Dunedin Data Services, based in Edinburgh, entered the final version. This company was being used for the MRC 11-16 schools survey (West and Sweeting 1996) and they appeared to pay attention to detail and charge competitive prices. The data were sent in January 1998. However commercial data entry was only viable for the closed questions so verbatim data were entered in house.

Preparing the data for analysis

Thorough data cleaning and preparation is a long process, as the data needs to be checked and rechecked. This involved checking the actual questionnaires prior to data entry and then checking the SPSS files using logic checks and range checks on each variable to search for inconsistencies. Sometimes new categories were added to variables. Additionally I had to decide how to categorise the verbatim data and how to deal with data from respondents who had moved.

Coding the verbatim text

The verbatim data needed to be in a quantifiable form that could be used for statistics. I will now explain how the social class data and the long standing illness data, were coded.

The social class data were coded using the CASOC package (Elias, Halstead et al. 1991). The package matches words in the verbatim text to jobs in its database. The verbatim text and its possible matches are presented on screen. If the classification is right the operator simply agrees. If the classification is wrong then the operator can move to the total list of classifications to find the correct classification. When all the cases have been entered each case has a 6 figure code attached which identifies the type of job as precisely as possible. The program then matches the job codes with social class codes. The coding procedure was first applied to own social class and then repeated for spouse or partner's social class. Registrar General's social class codes and also Cambridge Scale codes were used (Prandy 1990; Prandy 1992; Prandy 1997).

I decided to obtain Cambridge Scale codes as well as social class codes for two reasons. Firstly it is a continuous measure and so can be more easily compared to other continuous measures. Secondly the codes provided for different occupations are based on friends' and partner's occupations. So a code for a miner, for example, was originally developed as a combination of being a miner, the most common occupations of miners' spouses or partners and the most common occupations of miners' five closest friends. A lecturer and a miner are not likely to be close friends and the occupations of their friends are likely to be different. It is therefore a

measure of lifestyle and so could be a factor in determining whether health advantages among homeowners could be due to different lifestyles.

Codes for long standing illnesses were provided from a classification developed by doctors (Royal College Of General Practitioners 1986) that had been successfully used in the Twenty-07 study. Each illness had a code and severity of illness can also be coded. However unlike CASOC there is not a program available to automatically code them. Researchers at the Medical Sociology Unit have developed a dictionary program in FORTRAN (Microsoft 1993) so that all the coding does not have to be done manually. This programme matches words (or patterns of letters) and then codes all the similar ones into the same category. The dictionary was augmented for this study due to the age range of respondents. Some diseases only become common in the elderly and had not been experienced by Twenty-07 respondents.

The verbatim text was entered with up to eight illnesses. Each illness was run through the programme separately. When the illnesses had been coded the separate files were entered into SPSS and then combined. The categories were then checked for errors. For example "nerves" was initially categorised under diseases of the nervous system rather than mental disorders.

The verbatim strings were checked through using searches for "and" because sometimes two illness had been entered as one for example "blind and rheumatoid arthritis". The number of possible long standing illnesses was then increased to nine as there were two cases where a ninth illness had been incorporated into the eight illness. On other occasions further description of the same illness had been entered as different illnesses. For example someone might be describing their medication or even that they were now feeling better. Not being a medical specialist it was difficult to tell at times whether people were describing symptoms of the same illness or were describing something different. Therefore illnesses were only removed if it seemed certain that they were describing an illness to which they had already referred. Other problems were that some people appeared to have written in major illnesses since childhood. These illnesses were left in as it was thought they might have longstanding effects and to trust the respondents' judgement in including them.

This coding provided a further long standing illness variable: number of long standing illnesses.

Movers and postcode changes

Some respondents indicated that they no longer lived at the address to which the questionnaire had been sent. Unless they had moved within the Glasgow and Clyde Valley Structure Plan area, it was decided they should be removed from the analysis.

Fourteen respondents were removed from the sample because they stated that they were not living at the address to which the questionnaire was sent but did not say where they were now living. Eleven respondents had moved out of the Glasgow (G), Motherwell (ML) and Paisley (PA) postcode areas and were not living in the Glasgow and Clyde Valley Structure Plan area. These respondents were also removed from the analysis. Four respondents had moved to areas not in the structure plan area although they had G, ML or PA postcodes and were also removed.

Summary of the chapter

In this chapter I have explained how the psychological characteristics scales were chosen and how the ontological security from home scale was designed. I have described the design of the project and the procedures followed. At this point I was ready to begin the analysis. The analysis of the data is the subject of the next three chapters.

Chapter 5 Sample characteristics

Thus far I have reviewed the literature pertinent to the study of explanations of the relationship between housing tenure and health and wellbeing. Secondly I have described the Transport Housing and Wellbeing study in which data were collected to explore the relationship between housing tenure and health. In the next three chapters I describe the analysis of the data. In this chapter I describe the basic characteristics of the sample and how the variables used in later analysis were devised. In the following chapter I focus on the measure of ontological security from the home that I developed for this study. In chapter 7 I examine multivariate predictors of health and the variables that were important in explaining the relationship between housing tenure and health.

In this chapter I first describe the number and characteristics of respondents whose data were usable for these analyses. I then describe the sample in order to introduce the variables used in later analysis and to explain how these, rather than other variables, were developed from the questionnaire and why they were chosen for further analyses. I also compare the sample to other surveys to check its representativeness. All analyses were conducted using SPSS 9 for Windows (SPSS 1999).

From the 6500 questionnaires sent out, 2867 questionnaires were returned. After removing respondents who had left the area (see section 4.7) 2838 cases remained. After accounting for those who had died or moved (who are therefore not within the sampling frame (Bowling 1997)) there is a 50% response rate (see Macaulay (1998) for further details). This is typical for this sort of postal survey (Grinnell 1988). However there were missing data for some of the achieved sample so the effective sample for most analyses was smaller. I discuss the implications of this in Appendix 5.

5.1 Selecting respondents for further analysis

In this section I describe the distribution of the sample by tenure. I then discuss which tenures were contrasted in the main analysis. I also discuss how I took the reverse causation hypothesis into consideration.

Arguably the most important variable in the analysis is housing tenure; I therefore inspected the distribution of tenure groups to decide how to proceed with the analysis. The breakdown by housing tenure of the sample is shown in Table 5.1. The majority of respondents owned their homes. A fifth of the sample owned their homes outright and two fifths were buying through a mortgage. Only 12 respondents had taken up the shared ownership option. Nearly a third of the sample rented from the local council and smaller numbers rented from Scottish Homes, housing associations, co-operatives or charitable trusts. A few respondents did not provide enough information to be able to distinguish the group of social renters to which they belonged.

Table 5.1 The distribution of housing tenures in the Transport Housing and Wellbeing postal survey

	N	%
owned outright	519	18.8
being bought with a mortgage	1158	41.9
partly bought and partly rented (i.e. shared ownership)	12	.4
owner (unspecified)	3	.1
rented from Council	833	30.2
rented from Scottish Homes	58	2.1
rented from housing association, cooperative or charitable trust	100	3.6
social rented (unspecified)	5	.2
rented from a private landlord or letting agency	53	1.9
rented (unspecified)	1	.0
something else	5	.2
renting through an employer (tied)	9	.3
living in relation or partner's home	6	.2
Total	2762	100.0
Missing	76	
	2838	

There were only 53 private renters in the sample. I decided to exclude these from further analysis because of small numbers and variations within private renting (private renters vary from people waiting for social rented accommodation to students or professionals who have changed job location). This decision meant that the 'rented (unspecified)' category was also excluded. A minority of respondents described themselves as living with a relation (despite efforts in question wording to prevent this), or being housed through their employment. There were fewer than 10 cases in each of these categories so I also excluded them from further analysis.

There was a strong relationship between tenure and reporting being permanently sick as one's economic activity status (Phi =.224: Phi is the most useful measure of association based on the chi-square for two by two tables; unlike chi-square it is constrained to range between zero and ±1 (de Vaus 1996). An effect size greater than ± .2 is generally judged to be strong in large samples, in the field of social research) (Table 5.2). One in five social renters described themselves as permanently sick, compared with one in twenty owners. For many permanently sick people, owner occupation is not an option as they are unable to meet mortgage payments or to obtain a mortgage in the first place. Thus their economic status is more likely to cause their tenure rather than social renting causing ill health (Easterlow and Smith 1997).

Table 5.2 Tenure by permanently sick economic status

	Permanently sick		Other economic status		Total
	N	(%)	N	(%)	
owner	74	(4.5)	1568	(81.9)	1642
social renter	170	(18.1)	768	(95.5)	938
Total	244	(9.5)	2336	(90.5)	2580

Phi =.224 (p>.001)

To eliminate this potential confounding, working age respondents who described themselves as permanently sick were removed from the analysis leaving 2460 respondents (Table 5.3). This takes into account Explanation C (reverse causation) in box 2.1. Other authors have excluded the permanently sick in similar analyses (for example Sloggett and Joshi (1998)). However some who described themselves as retired or caring for home and family may have been in a similar state of health to

the permanently sick, so this exclusion does not totally rule out the reverse causation hypothesis.

Thus the sample that was analysed for the purpose of this thesis excludes those renting privately or through an employer, those living with relatives and those who reported themselves as economically inactive because of permanent sickness.

Table 5.3 Tenure after eliminating the permanently sick

	Owner	Social renter	Total	Missing or other tenure	Total
N	1568	768	2336	124	2460
%	67.1	32.9	100.0		

5.2 Characteristics overall and by tenure

Tables 5.4-5.21 show breakdowns by the variables used in further analysis[1] after disregarding the permanently sick. The skew of the variable is shown to see whether the variable needed to be transformed. There are some differences of opinion about when predictor variables need to be transformed (e.g. Altman 1991; SPSS 1999). In this analysis, I decided to transform variables with skew >±1 because the survey was filled in by respondents rather than trained interviewers. Although some problematic data were removed during cleaning, I thought it was best if data were normalised so that extreme cases would be given less weight. If a variable is skewed the mean is not always helpful so in addition the median and mode are reported for continuous variables. In the tables the means provided are untransformed but significance (p) values are transformed.

With each variable the number of the question on which the variable was based is included in brackets in the text. To enhance readability when a variable, rather than a concept, is discussed the variable name is written in italics. I also compare the social renters and owners in the sample.

Tables 5.4-5.6 present information on the demographic variables. Social renters tended to be older than owners (table 5.4) and were more likely to be female (table

[1] Ontological security is not mentioned here. Ontological security is the focus of Chapter 6.

5.5). The age and sex variables each had less than 10 missing cases, probably because these questions were asked on the first page of the questionnaire.

Table 5.4 Age distribution

	Sample	*Social renter*	*Owner*
Mean	50.93	54.48	49.21
Std dev	17.66	18.70	16.63
5% cases	25	25	25
95% cases	79	82	77
N[2]	2453	765	1565
Missing	7	3	3
Median	49		
mode	35		
Min	18		
Max	102		
Skew	.179		

p<.001

Table 5.5 Distribution of sex

	Male N (%)	Female N (%)	Total	
Sample	1001(40.8)	1451(59.2)	2452	8 missing
Social renter	273(35.7)	491(64.3)	1380	
Owner	677(43.2)	889(56.8)	950	P=.001

Table 5.6 Distribution of household types

	N (%)	N (%)		
Lives alone	Yes	No	Total	108
Sample	612(26.0)	1740(74.0)	2352	missing
Social renter	297(40.1)	443(59.9)	740	
Owner	280(18.6)	1222(81.4)	1502	P<.001
Married/cohabiting	Yes	No	Total	18
Sample	1346 (54.2)	1096(44.9)	2775	missing
Social renter	248(32.7)	511(67.3)	759	
Owner	1050(67.2)	512(32.8)	1562	P<.001

Household type	Single alone	Single + others	Couple alone	Couple + others	Total	110
Sample	612(26.0)	405(17.2)	615(26.2)	718(30.6)	2350	missing
Social renter	297(40.1)	197(26.6)	128(17.3)	118(15.9)	740	
Owner	280(18.7)	178(11.9)	464(30.9)	578(38.5)	1500	P<.001

[2] Due to the exclusion of private renters, those renting from employment and those whose tenure was unknown, the number of owners and social renters is not the same as the sample. Also the sample missing is not necessarily the sum of the owners and social renters missing. The statistics provided in these tables exclude the permanently sick from the sample as well as from tenure categories.

Table 5.6 explores household type. A marital status question was not included in the questionnaire; the questionnaire provided information of whether the respondent was currently living with a spouse or partner but not whether they were divorced or widowed. In preliminary analysis I used two variables relating to household composition (q55): *living alone* versus 'living with other people' and *living with a spouse or partner* versus 'not living with a spouse or partner'. These variables overlapped in meaning because all respondents living with a spouse or partner were not living alone. Thus it was impossible to distinguish whether the importance of *living alone* was due to the person being alone in the household or not having a partner. The confusion between partnership status and household type is present in other studies. For example, Sundquist and Johansson (1997) use married/cohabiting versus living alone. It is unclear from the text whether 'cohabiting' includes cohabiting with someone other than a partner or whether single parents were removed from the analysis .

As owners and social renters differ significantly on these variables (social renters tend to be more likely to be living alone and not to have a spouse or partner) further understanding was necessary. The preferable option would be to put both *living alone* and *partnership status* in analyses. However because all people 'living alone' are also 'single' this could cause problems with the statistical tests. Thus I developed a new variable, *household type*, which combined the respondent's partnership status with the number of people in the household. There were four categories: 'living alone', 'single living with others', 'couples living alone' and 'couples living with others'. Nearly a third were 'couples living with others' (for example parents living with children or their own parents). About a quarter were 'couples living alone' and a further quarter were 'single alone'. The remainder (about a fifth) were 'single living with others'. These could be young adults still living with their parents, single parents, older people now living with adult sons and daughters or lodgers. It was decided not to break down this variable further because of small numbers and the unwieldy number of categories that would result.

The continuous health variables are shown in table 5.7 and categorical health variables are shown in table 5.8. In the analysis there were eight health variables. Five of the health variables were continuous: number of long standing illnesses,

disabilities or infirmities (*number LSI*) (q9b), number of GP consultations over the last year (*GP visits*) (q3), number of symptoms over the last month (*symptoms*) (q10), and *anxiety* and *depression* as measured by the Hospital Anxiety and Depression Scale (q11).

Three variables were categorical: *general health over the last 12 months* (q1) was originally divided into four categories 'excellent', 'good', 'fair' or 'poor'. These were combined into 'excellent/good' and 'fair/poor' so the variable could be used in logistic regression. The other two categorical variables were the presence of a long standing illness, disability or infirmity (*LSI*) (q9a) and the presence of a limiting long standing illness, disability or infirmity (*LLSI*) (q9c).

Although the majority of the sample were quite healthy there were a few respondents who were suffering from severe illness so some of the variables had a skewed distribution. *Number LSI*, *GP consultations* and *symptoms* were transformed using the square root to reduce skew in later analyses. On all measures social renters were significantly more likely to be ill than owners.

Table 5.7 Distribution of continuous health variables

	Number LSI			GP visits			Symptoms		
	Sample	*Social renter*	*Owner*	Sample	*Social renter*	*Owner*	Sample	*Social renter*	*Owner*
Mean	.77	1.02	.65	3.64	4.51)	3.18	3.44	4.21	3.05
Std dev	1.24	1.38	1.13	4.41	5.07	3.83	2.77	3.10	2.50
5% cases	0	0	0	0	0	0	0	0	0
95% cases	3	4	3	12	12	10	9	8	11
N	2315	710	1502	2382	739	1527	2381	745	1526
Missing	145	58	66	78	29	41	79	23	42
Median	0			2			3		
mode	0			0			2		
Min	0			0			0		
Max	9			50			16		
Skew	2.08			3.17			1.23		
Transformation	Sqrt			Sqrt			Sqrt		
	p<.001			p<.001			p<.001		

Table 5.7 continued

	Anxiety			Depression		
	Sample	*Social renter*	*Owner*	Sample	*Social renter*	*Owner*
Mean	13.78	14.51	13.44	11.37	12.51	10.84
Std dev	3.81	4.03	3.63	3.31	3.66	2.97
5% cases	8	8	8	7	8	7
95% cases	21	22	20	18	19	16
Min	7	7	7	7	7	7
Max	27	27	27	27	24	25
N	2253	681	1473	2283	702	1477
Missing	207	87	95	177	66	91
Median	13			11		
mode	13			8		
Skew	.581			.963		
	p<.001			p<.001		

Table 5.8 Distribution of categorical health variables

		N(%)	N(%)		
General Health		Excellent/good	Fair/poor	Total	
	Sample	1588(64.6)	854(34.7)	2442	18 missing
	Social renter	366(47.9)	398(52.1)	764	
	Owner	1157(74.2)	402(25.8)	1559	(P<.001)
Lsi		No	Yes	Total	
	Sample	1399(59.4)	958(40.6)	2357	103 missing
	Social renter	360(48.8)	378(51.2)	910	
	Owner	980(64.8)	532(35.2)	1340	(p<.001)
LLSI		No	Yes	Total	
	Sample	1704(73.8)	605(26.2)	2309	151 missing
	Social renter	450(63.5)	259(36.5)	709	
	Owner	1179(78.8)	317(21.2)	1496	(P<.001)

Table 5.9 summarises the psychological characteristics. *Mastery* was from the Pearlin mastery scale (q77). *Self esteem* (q12) was computed using only the items from the Rosenberg scale not the extra items added by Twenty-07 researchers as they were more similar to mastery. The Twenty-07 items were the first, sixth, eighth and fourteenth (see Appendix 3). Owners had significantly higher mastery and self esteem scores than social renters.

Table 5.9 Distribution of psychological characteristics

	Mastery			Self esteem		
	Sample	*Social renter*	*Owner*	Sample	*Social renter*	*Owner*
Mean	20.02	19.17	20.46	30.90	29.6	31.48
Std dev	3.26	3.21	3.20	4.88	4.96	4.76
5% cases	15	14	15	22	21	24
95% cases	26	25	26	39	38	39
N	2300	696	1496	2252	675	1470
Missing	160	72	72	208	98	93
Median	20			31		
mode	21			29		
Min	7			12		
Max	28			40		
Skew	-.03			-.28		
	P<.001			p<.001		

Income (table 5.10) refers to net household income per month (q77) equivalised for household composition using the McClements scale (Department of Social Security 1997). The income distribution was skewed (only 5% of cases had incomes of £2460 or more per month) so the income variable was transformed using the square root in analysis.

Table 5.10 Income distribution

	Sample	*Social renter*	*Owner*
Mean	£1121	£627	£1378
Std dev	743.47	315.81	777.36
5% cases	£323	£278	£447
95% cases	£2459	£1280	£2857
N	1926	599	1239
Missing	534	169	329
Median	£940		
mode	£2000		
Min	£0		
Max	£6557		
Skew	1.783		
Transformation	sqrt		
	P<.001		

The Registrar General's social class classification has six categories: 'I professional' such as a lawyer, 'II managerial and technical' such as a sales manager, 'IIIN skilled non manual' such as a clerk, 'IIIM skilled manual' such as a cobbler, 'IV partly skilled manual' such as a care assistant and 'V unskilled manual' such as a labourer. Due to small numbers in *social classes* I and V, for multivariate analysis, I combined professional and managerial workers and also partly skilled and unskilled workers (q58-60) (table 5.11). Owners tended to have higher incomes than social renters and were more likely to be in higher social classes. Two fifths of owners were in social class I&II whereas less than two fifths of social renters were in non manual occupations.

Table 5.11 Distribution of social classes

	I&II N (%)	IIIN N (%)	IIIM N (%)	IV&V N (%)	Total	Missing
Sample	675(31.8)	583(27.4)	409(19.2)	458(21.6)	2125	335
Social renter	72(12.3)	147(25.2)	145(24.8)	220(37.7)		
Owner	581(40.2)	408(28.2)	247(17.1)	209(14.5)		p<.001

Next I summarise variables to do with the dwelling itself. To start with I examine various problems within the dwelling: damp, cold, crowding, underoccupancy, noise and the state of repair (q15) (table 5.12). A tenth of respondents report serious problems with cold. Damp, noise, crowding and state of repair are a serious problem for about 5% of the sample. A smaller proportion reported that their homes were too large. Social renters report significantly worse dwelling conditions on all measures.

Including all these measures individually in multivariate analysis would be too complex so I constructed a composite variable. *Dwelling conditions* is the sum of whether damp, cold, noise, crowding and the state of repair were major or minor problems or not a problem. Underoccupancy was not included for theoretical and empirical reasons. Theoretically a too large home is less likely to directly affect health compared to overcrowding where infection may be spread. There were also very small numbers affected by underoccupancy and there was a less significant tenure difference. I was concerned that including 'too large a home' would mask important differences in the other condition indicators such as cold and damp.

Scores on *dwelling conditions* ranged between 5 (none of the potential issues was a problem) and 15 (all potential issues were a major problem) (table 5.13). The median score was six suggesting that on average respondents reported one minor problem. Although not strongly skewed this variable was difficult to transform due to a large number of people with no problems. The best transformation was –1/ square root [x].

Table 5.12 Distribution of dwelling problem/condition variables

	Serious problem N(%)	Minor problem N(%)	Not a problem N(%)	Total	
Damp					
Sample	118 (5.0)	513(21.6)	1739(73.4)	2370	90 missing
Social renter	77(10.7)	196(27.3)	444(61.9)	717	
Owner	29 (1.9)	285(18.5)	1226(79.6)	1540	P<.001
Warmth in winter					
Sample	254(10.5)	553(22.9)	1607(66.6)	2414	46 missing
Social renter	160(21.5)	205(27.6)	378(50.9)	743	
Owner	66 (4.2)	315(20.3)	1173(75.5)	1554	P<.001
Overcrowding					
Sample	134(5.7)	384(16.3)	1843(78.1)	2361	99 missing
Social renter	66(9.3)	122(17.2)	523(73.6)	711	
Owner	52(3.4)	242(15.7)	1243(80.9)	1537	P<.001
Too large dwelling					
Sample	21 (.9)	185(8.1)	2090(91.0)	2296	164 missing
Social renter	10(1.5)	63(9.3)	601(89.2)	674	
Owner	9 (.6)	107(7.1)	1394(92.3)	1510	P=.020
Noise					
Sample	112(4.7)	511(21.7)	1735(73.6)	2358	102 missing
Social renter	69(9.7)	207(29.2)	432(61.0)	708	
Owner	32(2.1)	269(17.5)	1238(80.4)	1539	P<.001
State of repair					
Sample	132 (5.6)	409(17.2)	1832(77.2)	2373	87 missing
Social renter	84(11.7)	204(28.4)	431(59.9)	719	
Owner	30 (1.9)	178(11.6)	1332(86.5)	1540	P<.001

Respondents were asked in which year they moved into the property (q21). It was then possible to work out how many *years they had occupied the property.* The median number of years was ten; a few older respondents had lived in their homes all their lives so this variable was skewed; it was transformed using the square root. This variable was included in the analysis to see if length of residence in one dwelling had health implications. Social renters tended to have lived in their dwellings slightly longer.

Table 5.13 Distribution of dwelling related continuous variables

	Dwelling conditions			Years occupied property		
	Sample	*Social renter*	*Owner*	Sample	*Social renter*	*Owner*
Mean	6.55	7.43)	6.07	14.90	15.95	14.39
Std dev	1.92	2.31	1.45	13.17		12.68
5% cases	5	5	5	2	2	2
95% cases	11	12	9	40	44	38
N	2298	674	1517	2388	760	1547
Missing	162	94	51	72	8	21
Median	6			10		
mode	5			3		
Min	5			0		
Max	15			88		
Skew	1.69			1.48		
Transform	-1/sqrt			sqrt		
	p<.001			p=.005		

Dwelling type (q15) was divided into four categories (see table 5.14). 'Detached houses' were distinguished from 'semi detached' or 'terraced' houses as the amount of privacy and the prestige was possibly larger. 'Sandstone tenement flats' were separated from 'other types of flats' ('4 in a block' flats which are two storey semi detached dwellings separated into 2 first floor and 2 ground floor flats, 'flats in a low rise block' and 'flats in a high rise block') as inhabitants of sandstone tenements tended to have a different profile, being younger and more middle class (Hiscock, Kearns et al. Submitted). Most owners were in houses. Most social renters were in four in a block, low rise and high rise flats. The majority had a 'private garden' although a third of social renters did not have a garden (q25).

Table 5.14 Distribution of dwelling related categorical variables

Dwelling type	Detached house	Semi detached / terraced	Sandstone tenement flat	Other flat		
	N(%)	N(%)	N(%)	N(%)	Total	
Sample	318(13.6)	1038(44.4)	269(11.5)	715(30.6)	2340	120
Social renter	13 (1.8)	241(32.8)	84(11.4)	397(54.0)	735	missing
Owner	302(19.7)	778(50.7)	153(10.0)	303(19.7)	1536	P<.001
Garden	None	Shared garden	Private garden			
	N(%)	N(%)	N(%)	Total		
Sample	347(14.4)	491(20.4)	1564(65.1)	2402		58 missing
Social renter	240(31.7)	181(23.9)	335(44.3)	756		
Owner	90(5.8)	272(17.4)	1202(76.9)	1564		P<.001

Variables related to the size, contents and value of the dwelling are explored next. There were nine *consumer durables* included in the questionnaire (q26) (table 5.15). Having any of these nine items should make the home more pleasant and personalised. 'Telephone' was included because of its possible use as a transport substitute; 'central heating', 'double glazing' and 'washing machine' because of their impact on warmth and damp; 'smoke alarm', 'burglar alarm' and 'security lighting' because of their impact on feelings of security; a 'deep fridge or freezer' due to a possible impact on healthy eating and 'satellite or cable TV' to look at people's priorities. Possibly people would prioritise this pleasure or status item despite perhaps not having fulfilled what researchers might see as more basic needs.

Owners were more likely to have all consumer durables except for smoke alarms which were significantly more likely to be reported by social renters. The analysis would be too complex if all these items were entered separately. They were therefore summed, for each respondent, to provide an overall number of consumer durables owned (see table 5.16). Also shown in table 5.16 is that owners tended to have one more room on average than social renters (q20).

Table 5.15 Distribution of consumer durables

	No N(%)	Yes N(%)	Total	
Telephone				
Sample	123 (5.1)	2295(94.9)	2418	42 missing
Social renter	103(13.4)	665(86.6)	768	
Owner	13 (.8)	1555(99.2)	1568	P<.001
Satellite or cable				
Sample	1732(71.6)	686(28.4)	2418	42 missing
Social renter	597(77.7)	171(22.3)	768	
Owner	1075(68.6)	493(31.4)	1568	P<.001
Double glazing				
Sample	711(29.4)	1707(70.6)	2418	42 missing
Social renter	311(40.5)	457(59.5)	768	
Owner	355(22.6)	1213(77.4)	1568	P<.001
Central Heating				
Sample	312(12.9)	2106(87.1)	2418	42 missing
Social renter	133(17.3)	635(82.7)	768	
Owner	149 (9.5)	1419(90.5)	1568	P<.001
Freezer or fridge/freezer				
Sample	132(5.5)	2286(94.5)	2418	42 missing
Social renter	67(8.7)	701(91.3)	768	
Owner	55(3.5)	1513(96.5)	1568	P<.001
Washing machine				
Sample	129 (5.3)	2289(94.7)	2418	42 missing
Social renter	83(10.8)	685(89.2)	768	
Owner	32 (2.0)	1536(98.0)	1568	P<.001
Smoke alarm				
Sample	297(12.3)	2121(87.7)	2418	42 missing
Social renter	51 (6.6)	717(93.4)	768	
Owner	228(14.6)	1340(85.5)	1568	P<.001
Burglar alarm				
Sample	1697(70.2)	721(29.8)	2418	42 missing
Social renter	700(91.1)	68 (8.9)	768	
Owner	929(59.2)	639(40.8)	1568	P<.001
Security lighting				
Sample	1502(62.1)	916(37.9)	2418	42 missing
Social renter	621(80.9)	147(19.1)	768	
Owner	820(52.3)	748(47.7)	1568	P<.001

Table 5.16 Distribution of housing prosperity indicators

	Consumer durables			Number of rooms		
	Sample	*Social renter*	*Owner*	Sample	*Social renter*	*Owner*
Mean	6.26	5.53	6.67	4.51	3.63	4.96
Std dev	1.51	1.34	1.40	1.66	1.21	1.64
5% cases	4	3	4	2	2	3
95% cases	9	8	9	7	6	8
N	2418	768	1568	2401	755	1564
Missing	42	0	0	59	13	4
Median	6			4		
mode	6			4		
Min	0			1		
Max	9			15		
Skew	-.42			.86		
	p<.001			p<.001		

The median reported *value* of the home was £42 000 (q23) (table 5.17). A few respondents lived in very high value homes so this variable was skewed; it was transformed using the square root. On average renters thought their homes were worth about half the amount that owners thought their homes were worth. One variable was included on social comparisons: *comparisons with other dwellings in the street* (q24) (table 5.18). Owners were more likely than social renters to think their home was worth more and were less likely to think it was worth less.

Table 5.17 Distribution of dwelling values

	Sample	*Social renter*	*Owner*
Mean	£51 772	£28 124	£62 382
Std dev	34 990	13238	36356
5% cases	12 000	5 000	48 000
95% cases	120 000	29 500	130 000
N	2203	652	1485
Missing	257	116	83
Median	42 000		
mode	40 000		
Min	0		
Max	£300 000		
Skew	2.37		
Transformation	sqrt		

p<.001

Table 5.18 Distribution of dwelling worth comparison

	Worth more N(%)	Worth same N(%)	Worth less N(%)	Total	
Sample	399(16.2)	1766(71.8)	176 (7.2)	2341	119 missing
Social renter	49 (6.8)	576(80.0)	95(13.2)	720	
Owner	339(21.9)	1138(73.7)	68 (4.4)	1545	P<.001

Area as well as housing itself was explored. Table 5.19 shows the area problems (q32). Social renters were significantly more likely to say that all the problems were serious. The *area conditions* variable (table 5.21) was constructed in the same way as the dwelling conditions variable by summing the 14 area problem items. The scores ranged from 7 (no problems) to 42 (major problems on all 14 issues). Social renters lived in significantly worse condition neighbourhoods than owners.

Respondents were asked how well placed their homes were for a set of specified amenities (q31) (table 5.20). There were no tenure differences for primary schools, public transport and libraries. Where there were significant differences, owners regarded themselves as better placed than renters. Four items did not apply to all respondents (work, play areas, primary and secondary schools), which increased the missing values and inaccuracy of the data so these items were not used for multivariate analysis. The remaining items were placed into a principal components analysis. These were 'general food stores', 'your doctor's surgery', 'the nearest hospital with a casualty department', 'public transport', 'libraries' and 'chemist'. One factor was extracted using the criteria of Eigen values greater than one. This accounted for 53.3 % of the variance. A high score on the variable means a lack of nearby amenities (table 5.21). Social renters were more likely to report a lack of amenities.

Respondents were asked to specify the number of *people in their neighbourhood with whom they exchanged small favours* (q33) (table 4.21). Owners reported exchanging favours with significantly more neighbours. As a few respondents reported exchanging favours with large numbers of neighbours this variable was skewed and was transformed using a log transformation.

Table 5.19 Distribution of area problem/condition variables

	Serious problem N(%)	Minor problem N(%)	Not a problem N(%)	Total	
Vandalism					
Sample	380(15.7)	1352(55.8)	691(28.5)	2423	37 missing
Social renter	234(31.3)	382(51.1)	132(17.6)	748	
Owner	118 (7.6)	910(58.4)	529(34.0)	1557	P<.001
Litter and rubbish					
Sample	449(18.5)	1212(50.1)	760(31.4)	2421	39 missing
Social renter	223(29.7)	345(45.9)	184(24.5)	752	
Owner	196(12.6)	801(51.6)	554(35.7)	1551	P<.001
Smells &fumes					
Sample	170 (7.1)	582(24.3)	1646(68.6)	2398	62 missing
Social renter	84(11.4)	236(32.0)	417(56.6)	737	
Owner	67 (4.3)	302(19.6)	1175(76.1)	1544	P<.001
Assaults & muggings					
Sample	157(6.5)	870(36.0)	1388(57.5)	2415	45 missing
Social renter	96(12.8)	346(46.3)	306(40.9)	748	
Owner	44(2.8)	475(30.7)	1030(66.5)	1549	P<.001
Burglaries					
Sample	344(14.3)	1373(56.9)	694(28.8)	2411	49 missing
Social renter	154(20.7)	370(49.7)	220(29.6)	744	
Owner	159(10.3)	949(61.3)	440(28.4)	1548	P<.001
Disturbance by children or youngsters					
Sample	323(13.4)	1088(45.3)	992(41.3)	2403	57 missing
Social renter	183(24.8)	343(46.4)	213(28.8)	739	
Owner	113 (7.3)	688(44.5)	745(48.2)	1546	P<.001
Speeding traffic					
Sample	545(22.7)	979(40.7)	879(36.6)	2403	57 missing
Social renter	245(34.2)	277(37.3)	211(28.4)	742	
Owner	259(16.8)	652(42.2)	635(41.1)	1546	P<.001
Discarded needles or syringes					
Sample	78(3.3)	323(13.6)	1979(83.2)	2380	80 missing
Social renter	58(8.0)	170(23.4)	500(68.7)	728	
Owner	15(1.0)	129 (8.4)	1395(90.6)	1539	P<.001

Table 5.19 continued

	Serious problem N(%)	Minor problem N(%)	Not a problem N(%)	Total	
Uneven /dangerous pavements					
Sample	444(18.4)	1046(43.4)	919(38.1)	2409	51 missing
Social renter	207(27.9)	337(45.4)	198(26.7)	742	
Owner	201(13.0)	662(42.8)	685(44.3)	1548	P<.001
Nuisance from dogs					
Sample	331(13.7)	975(40.4)	1108(45.9)	2424	46 missing
Social renter	151(20.3)	315(42.4)	277(37.3)	743	
Owner	157(10.1)	618(39.8)	778(50.1)	1553	P<.001
Neighbourhood reputation					
Sample	162 (6.7)	484(20.2)	1755(73.1)	2401	59 missing
Social renter	112(15.2)	221(30.0)	403(54.8)	736	
Owner	34 (2.2)	239(15.4)	1277(82.4)	1550	P<.001
Poor public transport					
Sample	171(7.1)	579(24.1)	1656(68.8)	2406	54 missing
Social renter	63(8.5)	202(27.3)	474(64.2)	740	
Owner	95(6.1)	348(22.5)	1105(71.4)	1548	P=.002
Noise					
Sample	166 (6.9)	715(29.6)	1531(63.5)	2412	48 missing
Social renter	110(14.9)	286(38.7)	343(46.4)	739	
Owner	43(2.8)	370(23.8)	1141(73.4)	1554	P<.001
People round here					
Sample	87(3.6)	474(19.5)	1864(76.9)	2424	36 missing
Social renter	56(7.5)	222(29.6)	471(62.9)	749	
Owner	20(1.3)	220(14.1)	1316(84.6)	1556	P<.001

Table 5.20 Distribution of dwelling placing with regard to amenities

	Very well placed N(%)	Fairly well placed N(%)	Not very well placed N(%)	Not at all well placed N(%)	Total	
Work						
Sample	928(44.6)	909(43.7)	169(8.1)	75(3.6)	2081	379 missing
Social renter	215(38.7)	269(48.4)	49(8.8)	23(4.1)	556	
Owner	659(46.1)	608(42.6)	112(7.8)	49(3.4)	1428	P=.010
Food stores						
Sample	1081(44.9)	1040(43.2)	219(9.1)	68(2.8)	2408	52 missing
Social renter	311(41.9)	328(44.1)	72(9.7)	32(4.3)	743	
Owner	721(46.6)	659(42.6)	138(8.9)	30(1.9)	1548	P=.004
Your doctor's surgery						
Sample	914(38.0)	1070(44.5)	338(14.1)	81(3.4)	2403	57 missing
Social renter	249(33.8)	343(46.5)	115(15.6)	30(4.1)	737	
Owner	622(40.2)	669(43.3)	214(13.8)	41(2.7)	1546	P=.012
Primary schools						
Sample	1375(60.0)	802(35.0)	98(4.3)	17(.7)	2292	168 missing
Social renter	402(58.9)	250(36.6)	28(4.1)	3(.4)	683	
Owner	912(60.9)	506(33.8)	69(4.6)	11(.7)	1498	P=.511
Secondary schools						
Sample	873(38.2)	1047(45.8)	307(13.4)	61(2.7)	2288	172 missing
Social renter	228(33.4)	320(46.9)	115(16.8)	20(2.9)	683	
Owner	605(40.5)	677(45.3)	175(11.7)	38(2.5)	1495	P=.001
Safe play areas						
Sample	471(20.9)	891(39.6)	583(25.9)	305(13.6)	2250	210 missing
Social renter	118(17.7)	235(25.2)	174(26.0)	141(21.1)	668	
Owner	335(22.7)	616(41.8)	375(25.5)	147(10.0)	1473	P<.001
Public transport						
Sample	1188(49.4)	949(39.5)	196(8.2)	70(2.9)	2403	57 missing
Social renter	367(49.5)	300(40.4)	53(7.1)	22(3.0)	742	
Owner	763(49.4)	609(39.5)	124(8.0)	47(3.0)	1543	P=.886
Libraries including mobile						
Sample	890(37.3)	1151(48.2)	261(10.9)	84(3.5)	2386	74 missing
Social renter	277(37.7)	352(47.9)	71(9.7)	35(4.8)	735	
Owner	851(37.5)	1096(48.3)	244(10.7)	79(3.5)	1535	P=.095

Table 5.20 continued

	Very well placed N(%)	Fairly well placed N(%)	Not very well placed N(%)	Not at all well placed N(%)	Total	
Chemist or pharmacy						
Sample	1138(47.0)	1009(41.7)	191(7.9)	83(3.4)	2421	39 missing
Social renter	332(44.1)	328(43.6)	51(6.8)	41(5.5)	752	
Owner	752(48.5)	633(40.8)	130(8.4)	36(2.3)	1551	P<.001
Nearest casualty dept.						
Sample	592(24.8)	1138(47.6)	472(19.7)	188(7.9)	2390	70 missing
Social renter	158(21.6)	317(43.4)	178(24.4)	78(10.7)	731	
Owner	400(26.0)	773(50.2)	270(17.5)	97(6.3)	1540	P<.001

Table 5.21 Distribution of composite area variables used in further analysis

	Area conditions			Area amenities			Exchange small favours		
	Sample	*Social renters*	*Owners*	Sample	*Social renters*	*Owners*	Sample	*Social renters*	*Owners*
Mean	21.92	24.57	20.58	-.03	.07	-.08	2.64	2.40	2.80
Std dev	5.35	6.15	4.31	.99	1.01	.97	2.58	2.91	2.44
5% cases	15	15	15	-1.38	-.138	-.138	0	0	0
95% cases	32	35	29	1.76	2.02	1.67	6	6	7
N	2257	672	1479	2326	702	1514	2318	710	1505
Missing	203	96	89	134	66	54	142	58	64
Median	21			.02			2		
mode	20			-1.38			2		
Min	14			-.38			0		
Max	42			3.84			50		
Skew	.88			.68			4.77		
Transformation							Log (+0.5)		
	p<.001			p=.001			p<.001		

In summary the respondents to the questionnaire covered a wide range of the population. Fortunately there are sufficient numbers in owner occupation and social rented accommodation, in good and bad areas and dwellings and in good and bad health to make a useful analysis. Tenure was significantly related to all variables that will be analysed further. Weakest relationships were with length of residence (years occupied the home) and area amenities.

5.3 Comparison with other surveys

It is also necessary to see whether the respondents to the questionnaire were broadly representative of the general population or a biased sample. The Transport Housing and Wellbeing (THAW) postal survey sample was compared with other surveys and the 1991 UK census (for more details see Hiscock, Macintyre et al. 1999). THAW respondents appear to have similar health to those in the Glasgow region in the Scottish Health Survey (Scottish Office Department of Health 1995). There were some small differences between THAW respondents and Glasgow and Clyde Valley structure plan area 1991 census respondents. THAW respondents are older and more likely to be retired, of higher social class, more likely to be owners and less likely to be male than the general population as recorded in the census. Despite higher social class and more owner occupiers in THAW, income levels appear to be lower than that from the Family Expenditure Survey in Scotland (King, Thompson et al. 1997). This is likely to be due to THAW respondents underestimating their income as there was one question on income; respondents were not asked about each person in the household or each source of income separately.

Some of the differences between THAW and the census may be the result of changes in the population since 1991. Since 1991 the social rented sector has shrunk due to tenants buying their homes. The proportion of households owning and social renting found in THAW which took place in Autumn 1997 were very close to the proportions of tenures of Scottish dwellings estimated in December 1997 by the Scottish Executive (2000). Taking just owner occupation and social renting into account, the estimated proportion of owner occupiers by the Scottish executive was 65% and in the THAW study the proportion was 63%. Trends towards more owner occupation and a dwindling social rented sector have continued since 1997. The

private rented sector has seen little change in absolute numbers but the proportion has decreased due to growing numbers of dwellings in Scotland (an increase of more than 5% between the 1991 census and December 1997). Those renting privately or with a job or a business made up 7% of Scottish dwellings whereas they made up only 2% of the THAW sample. This could be due to regional differences or due to private renters being less likely to be on the electoral register and more likely to move.

Overall the THAW sample did not show worrying differences from the general population and any biases were in the direction commonly found in surveys (e.g. more women, higher social class etc.). Missing data in the sample increased the bias; analysis of the missing data is presented in Appendix 5.

5.4 Variables in the questionnaire not used in analyses

There were other variables available from the questionnaire which are not used in this thesis for the following reasons. *ACORN group* (the census based classification of areas) was discarded because it was too similar to tenure; there were very few social renters in the most desirable ACORN groups. Most income related variables were rejected because they were too similar to income (for example proportion of income from benefits (q72)) or they were not applicable to everybody (for example 'difficulty paying for house repairs' (q28) does not apply to council tenants who may nevertheless be very poor). *House payments* (q70) was rejected because it was not clear how this variable would theoretically relate to health. Also it would be different in different tenures: owners who have no payments are likely to be older having paid off their mortgages whereas social renters who have no payments are likely to be poorer and claiming housing benefit.

Household social class (Registrar General) was rejected in favour of *own social class* (Registrar General) due to missing data. Household social class data were only available for respondents who were themselves the householder or the partner of the householder. Arber and Ginn found that even in older women, who are perhaps least likely to have had a job related to their ability level, own social class was still no less predictive of general health and disabilities than household social class (Arber and Ginn 1993). The *Cambridge scale* was too strongly associated with social class and

was rejected in favour of Registrar General's social class because the Cambridge scale is a less well known and what it actually measures is somewhat ambiguous (Evans 1998).

Economic status (q56) was rejected due to ambiguities over what it measures (i.e. age, sex, income) and it could be the result rather than a cause of health (people may retire early due to ill health for example). Similarly *time per day spent in the home* (q22) could be more likely to be the result rather than a cause of ill health and would be confounded by age. *Years spent in the area* (q34) was found to be too similar to *years spent in the home*. *Floor of main living accommodation* (q16) was too similar to *dwelling type*.

Health behaviours were also not included in the analysis for the following reasons. Although these questions did not have too much missing data, they would still contribute to loss of cases in the analysis. Even with the variables that were included half the cases were missing. Moreover, social renters were found in preliminary analysis to be more likely to be teetotal than owners suggesting that *drinking alcohol* (q75) was not going to be helpful; some respondents explained in the questionnaire that they were not doing *exercise* (q79) due to illness rather than their illness being the result of lack of exercise so the direction of causality was going to be particularly problematic with this variable; and the *diet* question (q28) was not very discriminating because there were indications that some respondents included bread and chips as vegetables.

The main reasons that a variable was rejected from the analysis were that it was too similar to another variable, the theoretical pathway between the variable and health was ambiguous and/or there was too much missing data. The amount of missing data was of concern. I present an analysis of the missing data in Appendix 5.

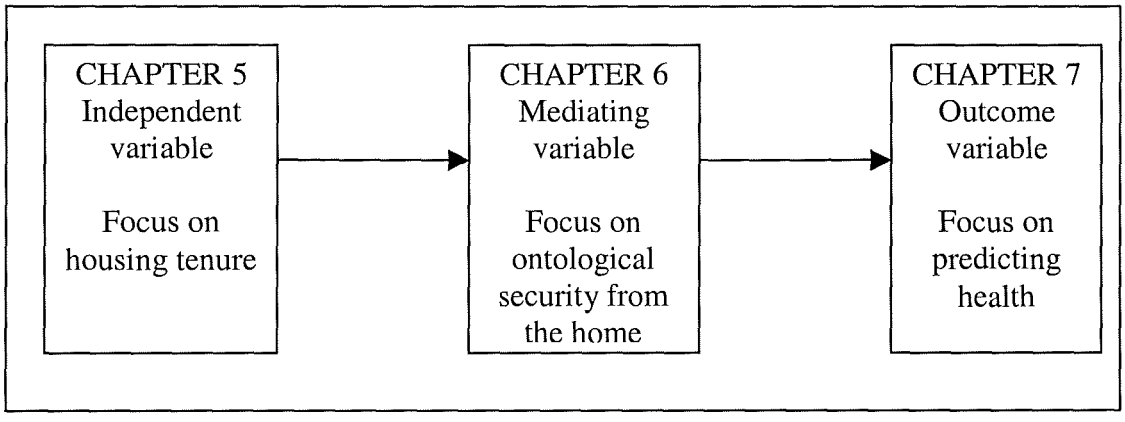
Summary of the chapter

This chapter is essentially an introduction to the analysis that follows in chapters 6 and 7. I have established which of the available variables concerning health, demographic, socioeconomic, psychological, housing and area characteristics from

the THAW survey will be explored further. I have also explained how housing tenure will be classified in the rest of the analysis.

I have also focussed on housing tenure in the bivariate analysis that I have described so far. I chose just to mention housing tenure in this chapter because this thesis seeks to explain the relationship between housing tenure and health. In the literature review, in chapters 2 and 3, I described results of previous studies that suggest that housing tenure is linked to health and then studies which may go someway toward explaining why tenure might be linked to health, particularly through ontological security. In this chapter I focus on the first part of the pathway between housing tenure and health, housing tenure itself. The plan of the analysis thus loosely follows the pattern described in box 5.1. In all three chapters the relationship between the three main elements (housing tenure, ontological security from home and health) is discussed in the context of other confounding variables which may also explain the relationship between housing tenure and health. If the thesis had been focussed on the mechanisms between, for example, social class and health, self esteem and health or possessing a garden and health; then I would have provided more detail about these variables here.

Box 5.1 Plan of the analysis chapters



Why have I chosen to provide details of the bivariate relationships between variables rather than just concentrating on the multivariate analysis, from which I will draw conclusions? Firstly, many of the variables are highly correlated such as self esteem and mastery, income and social class, house value and number of rooms, which will have implications for their relationships with tenure and health in the multivariate

results. Secondly it is important to show that the multivariate results are not due to anomalous characteristics of the THAW respondents rather than due to the effect of including various control variables in the same model. As the analysis is fairly complex I presented the reader, in this chapter, with just the bivariate results for housing tenure. I chose housing tenure because in this thesis I am arguing that housing tenure causes health and thus logically housing tenure comes first. Bivariate analysis between the other variables with ontological security, psychological characteristics and health is presented in chapter 6 when I have discussed how the ontological security variables are derived.

In the following analysis I therefore use the eight measures of health and a dichotomous measure of tenure (social renter vs. owner occupier) together with two measures of psychological characteristics (self esteem and mastery). Three demographic characteristics are included: age, sex and household type (a combination of marital status and household composition). Variables measuring economic status are own social class and income. Several housing variables are available: style of the dwelling measured using dwelling type and presence of a garden, the condition of the dwelling and years lived in the dwelling. The status of the dwelling is measured through its value, its value compared to others nearby, number of consumer durables within it and the number of rooms. The area is measured through area conditions, area amenities and neighbourhood networks (exchanging small favours).

In conclusion, the relationship between tenure and health will be assessed using a variety of health measures. Possible explanations for the relationship such as demographic, economic, psychological, housing and area characteristics of owners and social renters are available to be tested. In this chapter I have described the variables that will be used and their frequencies in the achieved sample. In the next chapter I turn to the scale devised for the questionnaire to measure ontological security from the home.

Chapter 6 Analysis of the ontological security from home scale

In the previous section I described the empirical distribution of the results. In this section I turn to the concept of ontological security. Using factor analysis I examine whether the ontological security from the home scale is indeed made up of three factors that correspond to protection, autonomy and prestige. I then explore whether the factors derived from the scale are bivariately related to tenure, housing and health. If there is not a bivariate relationship it is unlikely that ontological security is part of the pathway between housing tenure and health. Finally I use multivariate analysis to determine the best predictors of ontological security from the home. This analysis was conducted to find out whether tenure is related to ontological security independently or whether an initially observed relationship is due to other characteristics of housing that are also more common in owner occupied rather than social rented housing.

6.1 Distribution of responses on the ontological security from home items

Table 6.1 provides information on the percentages agreeing and disagreeing to each item of the ontological security scale. Respondents appeared to complete the scale successfully: less than a third of the respondents were unable to agree or disagree with any item (if a large number of respondents are unable to agree or disagree this can suggest that a scale has problems). All items, except item 8, have less than 50, out of 2838, cases missing. I had some concerns over item 8 (the negatively scored item). There were 33 respondents who strongly agreed with all items including item 8. Although it could be possible to be very happy with one's privacy, safety, prestige and also to be very worried about having to give the home up, another explanation is that the respondents were ticking all items as strongly agree and did not read item 8 properly. This item might have fared better nearer the beginning of the scale. Apart from item 8, the majority agreed with the items suggesting that overall respondents are obtaining ontological security from their homes. The items

on prestige (4 and 7) had slightly less skewed distributions, as more people were unable to agree or disagree.

Table 6.1. Distribution of responses of the ontological security from the home scale (percentages) (N=2838)

	Valid Percent					
	Agree Strongly	Agree Slightly	Neither agree nor disagree	Disagree slightly	Disagree strongly	N missing
1. I have privacy in my home	45.5	43.4	6.1	3.9	1.1	24
2. I can get away from it all in my home	36.1	44.0	11.0	7.5	1.5	42
3. I can do what I want when I want with my home	37.6	40.1	11.3	9.7	1.4	42
4. Other people would like a home like mine	17.1	39.9	32.7	7.3	2.9	44
5. I feel in control in my home	29.5	51.6	11.7	5.9	1.4	44
6. I feel safe in my home	37.6	51.4	7.4	2.6	1.0	36
7. My home makes me feel I'm doing well in life	20.2	38.6	30.7	8.0	2.4	48
8. I worry about losing my home	7.0	14.5	17.2	37.6	23.7	68
9. My home life has a sense of routine	18.8	56.9	15.2	7.4	1.6	36

To assess whether ontological security is likely to be part of the pathway between housing tenure and health, I explore the tenure distribution of the items (table 6.2). There are significant differences between owners and social renters for all items except item 9. However, both owners and renters were still much more likely to agree than disagree with all items suggesting that most people view their home positively. For the first seven items, owners were more likely to strongly agree and were less likely to disagree or disagree strongly. Social renters were more likely to tick the 'agree' box than owners for items on 'privacy', 'getting away from it all', 'what & when', and 'control'. This suggests that for these items social renters do feel positively towards their homes, but they are less strongly positive than owners. Social renters were less likely than owners to strongly agree or agree that their homes were safe, that most people would like their homes and that their home made them feel they were doing well in life. Thus there are larger tenure differences from these items.

To summarise, the ontological security from home scale did discriminate between owners and social renters: there was less positive endorsement of the items from

social renters, as compared to owners. Nevertheless the majority of social renters were positive about their homes.

Table 6.2 Ontological security from the home by housing tenure (excluding permanently sick)

	Strongly agree N(%)	Agree N(%)	Neither agree nor disagree N(%)	Disagree N(%)	Strongly disagree N(%)	Total	
Privacy							
Social renter	312(41.0)	337(44.3)	72(9.5)	30(3.9)	10(1.3)	761	135 missing
Owner Occupier	770(49.2)	661(42.3)	76(4.9)	47(3.0)	10(0.6)	1564	P<.001
Get away from it all							
Social renter	244(32.4)	345(45.9)	84(11.2)	65(8.6)	14(1.9)	752	146 missing
Owner Occupier	611(39.2)	675(43.0)	180(11.5)	85(5.5)	12(0.8)	1559	P<.001
What & when							
Social renter	252(33.4)	307(40.7)	94(12.5)	91(12.1)	11(1.5)	755	147 missing
Owner Occupier	619(39.7)	630(40.4)	173(11.1)	123 (7.9)	13(0.8)	1558	P=.001
Most people would like							
Social renter	98(13.0)	264(35.0)	262(34.7)	94(12.5)	37(4.9)	755	146 missing
Owner Occupier	298(19.1)	681(43.7)	504(32.3)	64(4.1)	12(0.8)	1559	P<.001
Control							
Social renter	197(26.1)	398(52.7)	93(12.3)	55(7.3)	12(1.6)	755	147 missing
Owner Occupier	505(32.4)	803(51.5)	177(11.4)	62(4.0)	11(0.7)	1558	P<.001
Safe							
Social renter	243(32.2)	384(50.9)	80(10.6)	37(4.9)	11(1.5)	755	146 missing
Owner Occupier	648(41.6)	814(52.2)	78 (5.0)	17(1.1)	2(0.1)	1559	P<.001
Doing well							
Social renter	116(15.4)	250(33.1)	266(35.2)	100(13.2)	23(3.0)	755	147 missing
Owner Occupier	379(24.3)	654(42.0)	446(28.6)	64 (4.1)	15(1.0)	1559	P<.001
Worry about losing							
Social renter	53(7.1)	100(13.4)	128(17.2)	321(43.1)	143(19.2)	745	159 missing
Owner Occupier	87(5.6)	208(13.4)	260(16.7)	573(36.8)	428(27.5)	1556	P<.001
Routine							
Social renter	165(21.7)	424(55.9)	104(13.7)	54(7.1)	12(1.6)	759	144 missing
Owner Occupier	267(17.1)	906(58.2)	247(15.9)	110(7.1)	27(1.7)	1557	P=.096

6.2 What is the structure underlying the ontological security from home scale?

The aim of this section is to explore the factor structure of the scale devised to measure ontological security from the home. I compare the results of the factor analysis with the theory used to develop the scale. If the factor structure of the scale is satisfactory then the scale can be employed in further analysis of the relationship between housing tenure and health. Data on all respondents, including the permanently sick, were used in the factor analysis.

Methodology used to examine the factor structure of the scale

I used two packages and programmes for factor analysis of the scale: SPSS Exploratory Factor Analysis (EFA) and EQS Confirmatory Factor Analysis (CFA). In EFA, SPSS selects the factor structure whereas in CFA, the researcher selects the factor structure and EQS provides measurements of how well the model fits the data (Dunn, Everitt et al. 1993). By comparing different factor structures the researcher can decide which factor structure is the best. In EFA, each item loads on all factors to some extent whereas in CFA, items are constrained only to load on the factors that the researcher decides. If there is a theory, CFA is preferable as EFA can produce spurious results due to idiosyncrasies in the dataset. As a reminder the theoretical structure of the scale is shown in box 6.1:

Box 6.1 Initial theoretical structure of the scale

Protection	Autonomy	Prestige
Item 1: I feel I have privacy in my home	Item 3: I can do what I want when I want in my home	Item 4: Most people would like a home like mine
Item 2: I can get away from it all in my home	Item 5: I feel in control in my home	Item 7: My home makes me feel I'm doing well in life
Item 6: I feel safe in my home		
Item 8: I worry about losing my home		
Item 9: My home life has a sense of routine		

I now discuss the EFA and CFA results in turn.

Exploratory factor analysis

I began with SPSS EFA, to decide whether factor analysis of the scale was a sensible option, and whether all items should be used or whether some items were not related to other items. The solutions provided by EFA could be used as a guide for possible factor structures in CFA.

I first inspected the Kaiser Meyer Olkin (KMO) test and Bartlett's test of Sphericity which test whether the data are suitable for factor analysis. KMO is a measure of sampling adequacy, which tests whether the partial correlations among variables are small relative to the simple correlations. If the partial correlations are small it means that two variables are only related to each other because they are related to other variables in the analysis. In the analysis the KMO was of a size to suggest that the variables are sufficiently related to each other for factor analysis to be appropriate (KMO=.883). Bartlett's test of sphericity tests whether the correlation matrix is an identity matrix, which would indicate that the factor model is inappropriate because the variables are not correlated (SPSS 1999). The significance levels again suggested that the data were suitable for analysis (χ^2=9442.876, df=36, p<.001). I used oblimin rotation in the factor analysis. Oblimin rotation allows the factors not to be at right angles to one another and so the factor structure can be a closer fit to the data.

Box 6.2 shows other considerations used to describe the factor analysis undertaken and describes the results in the tables.

Box 6.2 Guide to the EFA results

Row Heading	Explanation
Items included	Which of the nine items were included in the factor analysis.
N	The number of valid cases.
Criteria	Two criteria were used to decide the number of factors. Firstly the number of Eigenvalues greater than one. Also the number of factors could be forced which means that the researcher decides how many factors there will be rather than the number of factors being decided by statistical properties.
Eigenvalue>1	The number of Eigenvalues greater than one.
% of variance	The amount of variance accounted for by increasing numbers of factors. Good factor structures account for about 75% of the variance.
Extraction	Maximum Likelihood (ML) was used to extract the factors as it is very commonly used. However on some analyses Maximum Likelihood could not be employed due to communalities greater than 1 during iteration (see Heywood case below). To overcome this difficulty another form of extraction (Principle Axis Factoring) was used.
No. iterations	The number of iterations taken to reach an initial solution. The SPSS default is 25. In some analyses this needed to be increased.
Chi square	Chi-square should ideally be non significant to show that the model fits the data. However with large sample sizes this rarely happens. Where models include the same items, chi-squares can be compared to see if the fit improves.
Df	
Sig	
Residual>0.5	Where a model fits the data there would be no residuals larger than 0.5.
Heywood case	This occurs when there are communalities > 1 during iteration. Communalities are a measure of shared variance and are a measure of the relationship between an item and the underlying factor structure. The presence of a communality >1 means at least one of the parameters is greater than one. This is impossible as this would involve negative variance because a value of 1 means that the item maps exactly on to a factor. To adjust for this other parameters may be different from their true values (Harman 1960). The Heywood case may be due to insufficient items per factor or non normal data. Therefore if the Heywood case occurs the correlations and factor loadings are not presented. The Heywood case can be circumvented using different methods of factor extraction (SPSS 1998).
Pattern matrix	This matrix shows the loadings of the items on the factors. With a value of ±0.3 or higher an item is said to load on the factor. Each factor is shown in a separate column. The items are shown in the rows.
Correlations between factors	Lower correlations are preferable as high correlations could suggest that two factors are really one.

Table 6.3 shows the results of the analyses to decide whether to use all available items in the scale. There was a very good sample size for the items with less than 10% missing over the entire scale. The first model (EFA1) used all the items. Items 8 and 9 do not significantly load on any factor. Models EFA2 and EFA3 show the effect of leaving out item 8 when extracting one or 2 factors. The effect of leaving out item 9 is analysed in model EFA4. In models EFA 2, EFA3 and EFA4 items 8 and 9 do not significantly load on any factors. Additionally when both are left out (in models EFA5 and EFA6) more variance is explained. Without these two items the measures of sampling adequacy remained virtually unchanged (KMO=.977, Bartlett's test of sphericity χ=9102.769, df=21, p<.001) .

Table 6.3 EFA results using different combinations of items and different criteria

Model	**EFA1**		**EFA2**	**EFA3**		**EFA4**		**EFA5**		**EFA6**
Items included	All items		1-7,9	1-7,9		1-8		1-7		1-7
N	2703		2722	2722		2706		2728		2728
Extraction	ML		ML	ML		ML		ML		ML
Criteria	Eigen>1		Eigen>1	2 factors		Eigen>1		2 factors		3 factors
Eigenvalue>1	2		1	1		2		1		2
% of variance	58.5		52.7	64.6		63.6		71.1		79.0
No of iteration	5		5	5		5		5		12
Chi square	238.8		1037.5	193.8		205.56		169.80		29.7
Df	19		20	13		13		8		3
Sig	0.0001		.0001	.0001		.0001		.0001		.0001
Residual>0.5	2(5%)		11 (39%)	11 (39%)		2 (7%)		1 (4%)		0
Heywood case	-		-	-		-		-		Yes
Pattern matrix	F1	F2	F1*	F1	F2	F1	F2	F1	F2	*Not shown*
Item no:1	**.828**	-.028	**.55**	**.84**	-.04	**.83**	-.04	**.84**	-.05	*due to*
2	**.835**	-.035	**.55**	**.85**	-.05	**.84**	-.05	**.86**	-.07	*Heywood*
3	**.676**	.124	**.53**	**.68**	.12	**.69**	.11	**.70**	.10	*case*
4	-.064	**.772**	**.42**	-.06	**.77**	-.03	**.76**	-.03	**.76**	
5	**.459**	**.420**	**.60**	**.46**	**.42**	**.49**	**.39**	**.49**	**.38**	
6	**.331**	**.400**	**.41**	**.33**	**.40**	**.35**	**.37**	**.36**	**.37**	
7	-.039	**.844**	**.49**	-.04	**.84**	.01	**.81**	.01	**.81**	
8	.146	-.006				.15	-.01			
9	.108	.297	.14	.11	.29					
Correlations between factors		.67	-		.67		.64		.65	*See above*

*Loadings based on initial communalities are shown because a pattern matrix was not produced for one factor

I therefore decided to leave out items 8 and 9 for the rest of the factor analyses. The first of these was "I worry about losing my home". It is possible that the low loadings were because it was the only negative item in the scale. The second was "My home life has a sense of routine" which was included because following routines is thought to be a feature of the development of ontological security although it was less likely to be to do with tenure. I decided to remove these two items from the factor analysis. This meant that the first two aspects of Dupuis and Thorns' breakdown of ontological security are no longer included so perhaps the scale now measures something less than the whole concept of ontological security.

The reliability coefficient for all items (Cronbach's alpha) is .82. Cronbach's alpha is a measure of internal consistency based on the average inter-item correlation. Without either item 8 or 9 the coefficient increases. Removing any other item reduces the coefficient. The coefficient increases to .88 if both items are removed.

Both these coefficients are comparable with those found for self esteem and mastery (see section 4.5). I theorised that the remaining seven items would have the following factor structure (box 6.3):

Box 6.3 Revised theorised factor structure of the scale

Protection	Autonomy	Prestige
Item 1: I feel I have privacy in my home	Item 3: I can do what I want when I want in my home	Item 4: Most people would like a home like mine
Item 2: I can get away from it all in my home	Item 5: I feel in control of my home	Item 7: My home makes me feel I'm doing well in life
Item 6: I feel safe in my home		

The factor analysis could not proceed further because all solutions were improper due to communalities greater than 1 in analysis known as the Heywood case (see box 6.2). I experimented with different methods of extraction to see whether they also resulted in the Heywood case. Generalised least squares and unweighted least squares methods did result in the Heywood case so they were eliminated. I chose Principal Axis Factoring (PAF) because the image and alpha methods use processes that are more different from Maximum Likelihood (Norusis 1993). PAF does not provide chi-square results. Table 6.4 shows the results of the three and four factor solutions using PAF extraction.

Table 6.4 Principal Axis Factoring extraction using the first 7 scale items (N=2728)

Model	**EFA7**			**EFA8**			
Extraction	Principal axis factoring (PAF)			PAF			
Criteria	3 factors			4 factors			
Eigenvalue>1	2			2			
%of variance	79.0			85.7			
No. iterations	101			16			
Residual>0.5	0			0			
Heywood case	-			-			
Pattern matrix	F1	F2	F3	F1	F2	F3	F4
Item no:1	**.89**	-.01	.03	**.80**	-.01	-.01	-.06
2	**.64**	.01	-.18	**.78**	.05	-.04	.05
3	.02	-.01	**-.87**	.15	-.03	**-.74**	.11
4	-.02	**.74**	.00	-.01	**.76**	.01	.02
5	.13	**.38**	**-.41**	-.08	.08	**-.81**	-.12
6	**.34**	**.41**	-.01	.29	.14	-.13	**-.36**
7	-.02	**.82**	-.02	.02	**.79**	-.01	-.01
Factor Correlations		F1	F2		F1	F2	F3
	F2	.60		F2	.57		
	F3	-.78	-.61	F3	-.83	-.72	
				F4	-.29	-.56	.35

The model that explained the most variance was the four factor model. However the three factor model also explained a substantial amount of variance and is more parsimonious as there are fewer factors. The four factor model also is quite close to the theory, the difference being that the safety item loads on its own factor rather than with items 1 and 2. A three factor solution is also attractive because the scale was theoretically composed of three factors. As in the theory, in the three factor solution items 1, 2 and 6 load on one factor, items 3 and 5 load on a different factor and items 4 and 7 load on a third factor. The main difference from the theory is that items 5 and 6 also load on the factor with items 4 and 7 although their loadings are lower than items 4 and 7.

From the SPSS factor analysis, I decided to drop items 8 and 9. Items 1, 2 and 6 were intended to relate to the protection construct; items 3 and 5 autonomy and items 4 and 7 prestige. I now move onto the CFA models.

Confirmatory factor analysis

I used Robust ML estimation for all CFA models, due to kurtosis and skew in the items. The items were skewed as more respondents agreed than disagreed. All appropriate Z scores were above 1.96. The comparative fit index (CFI) is a widely utilised assessment of fit (Bentler and Wu 1995). I quote the Robust CFI as there was some skewness and kurtosis in the data (box 6.4).

Box 6.4 Guide to the CFA tables

Row heading	**Explanation**
Model name	Name given to particular analysis
Factors	Number of factors and which items load on which factor
Chi square Degrees of freedom	The chi-square to degrees of freedom ratio should be as small as possible for the model not to be significantly different from the data. This chi-square is a much better estimate than the SPSS EFA equivalent because the factor loadings are constrained. However the CFI tends to be preferred as it has a more exact cut off point for a model to fit the data.
Comparative Fit Index (cfi)	A CFI above 0.9 means that it is worth looking at the results of the analysis. For the model to fit the data well a CFI above 0.95 is necessary
Correlations between factors	As with EFA low correlations indicate that the factors are strongly differentiated
Loadings	Items should have loadings of 0.5 or higher. However lower loadings are acceptable particularly if a variable loads on more than one factor. In this case together loadings on all the factors should sum to more than 0.5.

I explored various models based either on the theory or the SPSS models (in Tables 6.5 and 6.6 models are shown in order of size of the Comparative Fit Index). The first model I tried (CFA1), was a one factor model. This was not a good fit (cfi=.881). Some other models fitted the data (cfi>.9) but did not fit the data very well. These are shown in Table 6.5. The SPSS 4 factor model was one of these.

The theoretical model (CFA8) did fit the data (cfi=.952). The correlations between factors, however, were high so various other combinations were tried. The two factor model suggested by SPSS (CFA12) fitted the data better than the theoretical model. Nevertheless the best model (CFA15) had a much lower chi-square to degrees of freedom ratio compared to any other model tested. The ratio is still on the high side (approximately 5:1 when the optimum ratio is 2:1) but the Comparative Fit Index of 0.996 suggested that the model fitted the data very closely. The best factor structure was the same in SPSS and EQS which also provides support for CFA15.

The factor structure I adopted involved cross loadings. To check whether the cross loadings increased the goodness of fit at the expense of complexity, I compared the CAIC statistic of the theoretical model (CFA8) and the final model (CFA15). The CAIC is Bozdogan's version of Akaike's Information Criterion. This statistic takes into account the number of parameters that must be estimated as well as the goodness of fit. A smaller CAIC is considered to be preferable. The CAIC of the adopted model was substantially lower than that of the original theoretical model (-35 and 874 respectively).

Table 6.5 Confirmatory Factor Analysis models CFI <0.95

					Spss PAF 4factor			
Model name	**CFA1**	**CFA2**	**CFA3**	**CFA4**	**CFA5**	**CFA6**	**CFA7**
Factors	1	F1:1,2,3,5 F2:4,7 F3:6	F1:1,2,3, F2:6 F3:4,7 F4:5	F1:1,2,3,5 F2:4,6,7	F1: 1,2 F2:3,5 F3:4,7 F4:6	F1:1,2,3,5,6 F2:4,7	F1:1,2,3,5,6 F2:4,6,7
Chi square	998.9	764.5	528.7	615.3	497.3	544.4	438.3
Degrees of freedom	14	13	12	13	10	13	12
Comparative Fit Index (cfi)	0.881	0.902	0.927	0.929	0.932	0.936	0.949
Correlation between factors		F1f2 .773 F1f3 .732 F2f3 .700	F1f2 .709 f2f3 .709 F1f3 .723 f2f4 .670 F1f4 .807 f3f4 .758	.799	F1f2 .894 f2f3 .814 F1f3 .682 f2f4 .722 F1f4 .694 f3f4 .700	.741	.712
Loadings							
Item no:1		**.811*F1**	**.835*F1**	**.769*F1**	**.854*F1**	**F1.766**	**.775*F1**
2		**.813*F1**	**.840*F1**	**.774*F1**	**.852*F1**	**F1.767**	**.777*F1**
3		**.815*F1**	**.816*F1**	**.783*F1**	.814*F2	**F1.772**	**.779*F1**
4		.766*F2	*.776*F3*	.703*F2	*.767*F3*	F2.731	.729*F2
5		**.832*F1**	1.000F4	**.801*F1**	.867*F2	**F1.806**	**.798*F1**
6		*1.000F3*	1.000F2	.687*F2	1.000F4	**F1.658**	**.421*F1**.301*F2
7		.864*F2	*.863*F3*	.782*F2	*.862*F3*	F2.835	.838*F2

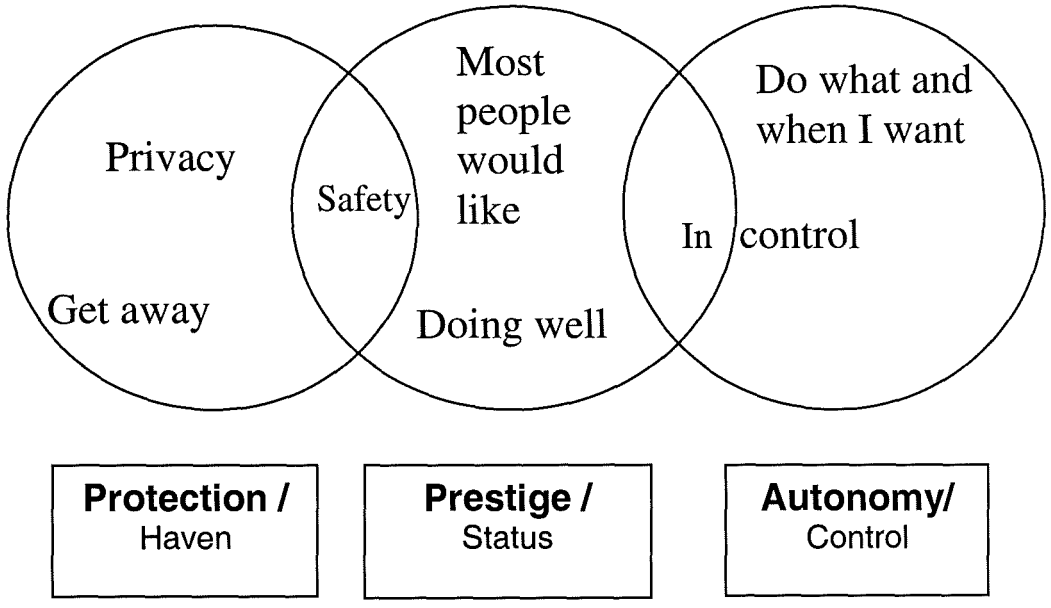
Table 6.6 Confirmatory Factor Analysis models CFI >0.95

	Theory				Spss ML eigen>1			Spss PAF 3factor
File name	**CFA8**	**CFA9**	**CFA10**	**CFA11**	**CFA12**	**CFA13**	**CFA14**	**CFA15**
Factors	F1:1,2,6 F2:3,5 F3:4,7	F1: 1,2 F2:3,5 F3:4,6,7	F1:1,2,3, F2:4,7 F3:5,6	F1:1,2,3,5 F2:4,7 F3:5,6	F1:1,2,3,5,6 F2: 4,5,6,7	F1: 1,2,6 F2:3,5 F3:4,6,7	F1: 1,2,6 F2:3,5 F3:4,7 F4:6	F1: 1,2,6 F2: 3,5 F3: 4,5,6,7
Chi square	398. 8	370.8	204.3	196.6	202.9	173.5	171.1	45.6
Degrees of freedom	11	11	11	10	11	10	9	9
Comparative Fit Index (cfi)	0.952	0.955	0.976	0.977	0.977	0.980	0.980	0.996
Correlation between factors	F1f2 .900 F1f3 .668 F2f3 .766	F1f2 .867 F1f3 .693 F2f3 .633	F1f2 .640 F1f3 .908 F2f3 .857	F1f2 .641 F1f3 . .879 F2f3 . .879	.641	F1f2 .870 F1f3 .604 F2f3 .769	F1f2 .867 f2f3 .765 F1f3 .603 f2f4 .767 F1f4 .788 f3f4 .601	F1f2 .865 F1f3 .606 F2f3 .633
Loadings								
Item no:1	**F1.809**	**.822*F1**	**.801*F1**	**.800*F1**	**.799*F1**	**.826*F1**	**.827*F1**	**.825*F1**
2	**F1.804**	**.828*F1**	**.806*F1**	**.805*F1**	**.803*F1**	**.823*F1**	**.824*F1**	**.826*F1**
3	F2.781	.780*F2	**.775*F1**	**.777*F1**	**.777*F1**	.781*F2	.779*F2	.838*F2
4	*F3.733*	*.707*F3*	.735*F2	.734*F2	.734*F2	*.731*F3*	*.731*F3*	*.733*F3*
5	F2.838	.839*F2	*.816*F3*	**.170*F1***.659*F3*	**.522*F1** .360*F2	.838*F2	.839*F2	.563*F2 .342*F3*
6	**F1.650**	*.680*F3*	*.678*F3*	*.684*F3*	**.368*F1** .373*F2	**.369*F1***.382*F3*	**-.433*F1** 1.305F4	**.351*F1** .402*F3*
7	*F3.833*	*.786*F3*	.831*F2	.832*F2	.828*F2	*.833*F3*	*.835*F3*	*.825*F3*

Discussion

Figure 6.1 shows the most likely factor structure suggested by statistical analysis underlying respondents' answers to the scale. It is quite close to the theory. There are three factors that seem to correspond to the home being a source of protection or a private haven, providing autonomy and control and providing prestige or status. The difference is that the control and safety items also load on the prestige factor. This result provides support for the argument that status is an integral part of ontological security. This implies that, as Giddens and Antonovsky suggested, prestige should not be seen as separate from autonomy and protection. Feeling insecure may be related to low status. Perhaps unless one feels to some extent safe and in control of the home, one cannot obtain status from the home. Alternatively, low status homes are likely also to be lacking in the ability to protect and provide control.

Figure 6.1 The best-fitting factor structure for psychosocial benefits from the home (CFA15 and EFA7)



As the safety item did not just load with 'privacy' and 'get away' but also with the prestige items, the first factor perhaps could be seen more as 'haven' than 'protection' with more of an emphasis of being able to escape from the world than feeling unharmed.

The 'control' item loaded on the prestige factor as well as the autonomy factor and only the "do what I want when I want" item loaded solely on the autonomy factor. Autonomy is a better name for this factor than 'control' because the control item loads on two factors. The small number of items relating to this factor suggests that this may be the weakest of the three factors as it may be under defined. This may be one explanation for why the factors are highly correlated. Despite high correlations especially between the protection and autonomy factors (above 0.8), the model that was the closest fit to the data separated the factors.

In conclusion, the factor analysis did not invalidate the hypothesis that ontological security is made up of three components: protection, autonomy and prestige. This meant that the factors were contenders for being part of the relationship between housing tenure and health. The factors were transformed into scores for further analysis by repeating the analysis using SAS, a statistical package (SAS Institute 1990). A factor score combines the data from the items loading on a factor into one continuous variable. This is useful because it means there are fewer variables necessary to enter in further analyses, resulting in simpler models. Factors are calculated to have a mean of zero, a standard deviation of about one, and not to be significantly skewed.

6.3 The tenure distribution of ontological security from the home

In this section I present bivariate analysis of tenure and ontological security from the home. I analyse the factors and a summary variable of the scale. I first compare owners and social renters. I then disaggregate tenure into its constituent categories.

In the analysis presented from hereon the permanently sick are excluded as I again look at tenure as an explanatory variable. Table 6.7 shows the distribution of the ontological security factors over the whole sample and by tenure. Without the permanently sick the factor means are slightly above zero. The social renters' mean is below the sample mean and the owners' mean is above the sample mean. The largest tenure difference is on the prestige factor. This is as expected because the largest tenure differences on the individual items were for the prestige and safety items which loaded on this factor. I summed all nine items in the scale and

transformed the resulting variable so that it was on a scale similar to the factors (table 6.8). The tenure difference on this variable was intermediate between prestige and the protection and autonomy factors.

I thought it would be useful to examine the relationships between the factors and tenure more closely at this point (table 6.9). Starting with the social renters, on all three factors Scottish Homes renters have the lowest scores (implying they receive least ontological security from their homes) and housing association, cooperative and charitable trust renters have the highest scores. There is less difference between social renters on the prestige factor. Private renters have intermediate scores between Scottish Homes and Council renters on the protection and autonomy factors. They have the lowest scores on the prestige factor. Due to small numbers, for all except council renters, confidence intervals are very large and there are no significant differences between renting groups.

Among owners, those who own their homes outright have the highest scores on all factors. Mortgagers have the lowest scores on the protection and autonomy factors and shared owners have the lowest prestige mean (there are only 10 shared owners so confidence intervals are very large). Outright owners appear to have significantly more protection and autonomy than owners with mortgages. I also divided owners into owners of property that had never and ever been social rented (market and Right to Buy owners). Market owners had higher scores on all factors but the difference was not significant.

Both mortgagers and outright owners have significantly higher scores than council renters on all factors. Outright owners have significantly higher scores than Scottish Homes tenants and more prestige than housing association and Scottish Homes renters. There was little difference between mortgagers and housing association tenants means on the protection and autonomy factors but there was a larger difference on the prestige factor.

Outright owners are more positive than mortgagers. There were some suggestions that housing association tenants may feel more positive about their homes than other social renters. The large sizes of the confidence intervals confirm that numbers are

too small for within tenure analysis. Additionally these differences may be due to characteristics other than tenure. For example, outright owners are likely to be older than mortgagers. The relationship between ontological security from home and other characteristics of the respondents and of their houses will be discussed next.

Table 6.7 Ontological security from the home factors by tenure (p<.001 for all analyses)

	Protection			Autonomy			Prestige		
	Sample	Social renters	Owners	Sample	Social renters	Owners	Sample	Social renters	Owners
Mean	.02	-.11	.11	.02	-.10	.10	.03	-.22	.17
Std dev	.91	.96	.85	.90	.94	.84	.89	.92	.79
5% cases	-1.72	-2.03	-.40	-1.69	-1.95	-1.48	-1.51	-1.94	-1.04
95% cases	1.08	1.08	1.08	1.10	1.10	1.10	1.44	1.44	1.44
N	2382	727	1540	2382	727	1540	2382	727	1540
Missing	78	41	28	78	41	28	78	41	28
Median	-.11			-.09			.14		
mode	1.08			1.10			1.44		
Min	-3.94			-3.65			-3.42		
Max	1.08			1.10			1.44		
Skew	.96			.83			.52		

Table 6.8 Ontological security from the home items summed ("*scale*") by tenure (p<.001)

	Sample	Social renters	Owner occupiers
Mean (95%CI)	.04	-.15 (-.23--.08)	.16 (.11-.20)
Std dev	.98	1.07	.90
5% cases	-1.71	-2.08	-1.34
95% cases	1.60	1.42	1.60
N	2367	719	1533
Missing	93	49	35
Median	.13		
mode	-.24		
Min	-4.84		
Max	1.79		
Skew	-.56		

Table 6.9 Ontological security by disaggregated tenure

		Protection			Autonomy			Prestige		
	N	Mean	*95%*	*CI*	Mean	*95%*	*CI*	Mean	*95%*	*CI*
SOCIAL RENTERS										
Council	606	-.12	*-.19*	*-.04*	-.11	*-.19*	*-.04*	-.23	*-.30*	*-.15*
Scottish Homes	46	-.31	*-.64*	*.03*	-.23	*-.55*	*.08*	-.29	*-.59*	*.01*
Housing association etc	72	.09	*-.11*	*.29*	.04	*-.16*	*.25*	-.11	*-.35*	*.12*
PRIVATE RENTERS	46	-.18	*-.51*	*.14*	-.21	*-.55*	*.12*	-.43	*-.77*	*-.08*
OWNERS										
Shared ownership	10	.16	*-.41*	*.73*	.23	*-.27*	*.74*	.03	*-.55*	*.62*
Bought with mortgage	1053	.06	*.01*	*.12*	.05	*.00*	*.10*	.16	*.11*	*.20*
Owned outright	473	.20	*.13*	*.28*	.20	*.13*	*.28*	.22	*.15*	*.29*
OWNERS (alternative classification)										
Right to Buy	485	.05	*-.03*	*.13*	.06	*-.01*	*.14*	.13	*.06*	*.20*
Market	1030	.13	*.08*	*.18*	.12	*.06*	*.17*	.20	*.15*	*.25*

6.4 Bivariate analyses comparing ontological security with psychological characteristics and health

In the previous section tenure was shown to be significantly related to the ontological security factors and to all items summed together. In this section I answer the following questions:

1. How is ontological security bivariately related to psychological characteristics and health?
2. How are psychological characteristics bivariately related each other and to health?
3. How does ontological security bivariately relate to demographic, socio-economic and housing related characteristics?
4. How do the relationships in question 3 compare with:
    a. The relationships between psychological characteristics and demographic, socio-economic and housing related characteristics
    b. The relationships between health and demographic, socio-economic and housing related characteristics

These bivariate analyses will provide information on whether ontological security is a plausible link between housing tenure and health.

Statistical techniques used

I now describe the statistics used in the bivariate analyses. Bivariate relationships between two continuous variables are assessed through Pearson correlations. The size of the relationship is ascertained using Pearson's r which is the correlation coefficient measuring the degree of the association between two variables. If $r=0$ there is no relationship between the variables and if $r=\pm1$ then the variables are perfectly correlated. A positive correlation ($r>0$) signifies that as one variable increases the other variable increases whereas a negative correlation ($r<0$) denotes that as one variable increases the other decreases (Altman 1991).

Bivariate relationships between continuous and categorical characteristics are measured using one way Analysis of Variance (ANOVA). ANOVA tests the null hypothesis that two or more group population means are equal, by comparing the sample variance estimated from the group means to that estimated within the groups (SPSS 1999). The size of the association is measured using eta^2. Eta^2 is the proportion of variance in the dependent variable that is explained by differences

among groups (SPSS 1999). Eta^2 does not show the direction of the relationship so I also present mean values.

Bivariate relationships between two categorical variables are measured using chi square tests. The chi square tests the hypothesis that the row and column variables in a table are independent (SPSS 1999). The measure of the association of the chi square is Phi when both variables tested have two categories. Phi is equivalent to Pearson's r. For variables with more categories Cramer's V is used. Cramer's V, varies between 0 and 1. Greater associations between the variables are indicated by higher values of Cramer's V (de Vaus 1996). Cramer's V does not show the direction of the relationship so I also provide percentages in each health category.

Similar variables are grouped in each table for ease of comparison. The tables first present the relationships with ontological security, then psychological characteristics, then continuous health indicators, then categorical health indicators. Means and correlations are shown for raw data. However significance levels for skewed variables are calculated using the variable transformations indicated in section 5.2. Unless otherwise stated all discussion is about significant relationships. Box 6.5 provides more information to aid interpretation of the tables.

Box 6.5 Key to tables showing bivariate relationships

V= Cramer's V Scale =ontological security from home scale LSI = long standing illness LLSI= limiting long standing illness %=column percentage

Ontological security from the home (Table 6.10)

In table 6.10 I consider the first question, 'How is ontological security bivariately related to psychological characteristics and health?' All the ontological security variables were very strongly positively correlated with each other and with psychological characteristics. Respondents with higher scores on any of the ontological security variables tended to experience fewer *symptoms*, less *depression*, less *anxiety* and were more likely to report excellent or good *general health*. There was no relationship between ontological security and *GP visits*, *number* of *LSI* and *LLSI*. There was no relationship between *prestige* or the *scale* and *LSI*. Respondents receiving more *protection* and *autonomy* tended to be slightly more likely to report *LSI* ($p<.05$). This may be due to age or other confounding variables and will need to be explored more fully in multivariate analysis. The *scale* was related most strongly to good health followed by *prestige* then *protection*.

Table 6.10 Bivariate relationships between ontological security, psychological characteristics and health

	Protection				Autonomy				Prestige				Scale			
		r	sig	n		r	sig	n		r	sig	n		r	sig	n
Protection						.945	.000	2382		.711	.000	2382		.897	.000	2365
Autonomy		.945	.000	2382						.748	.000	2382		.909	.000	2365
Prestige		.711	.000	2382		.748	.000	2382						.879	.000	2365
Scale		.897	.000	2365		.909	.000	2365		.879	.000	2365				
Mastery		.302	.000	2250		.324	.000	2250		.347	.000	2250		.388	.000	2240
Self esteem		.358	.000	2213		.373	.000	2213		.414	.000	2213		.453	.000	2204
Number LSI		.039	.062	2254		.036	.084	2254		-.014	.497	2254		.022	.297	2243
GP visits		-.014	.506	2315		-.010	.643	2315		-.031	.139	2315		-.025	.225	2303
Symptoms		-.170	.000	2311		-.157	.000	2311		-.179	.000	2311		-.203	.000	2297
Anxiety		-.254	.000	2206		-.253	.000	2206		-.266	.000	2206		-.315	.000	2195
Depression		-.286	.000	2233		-.273	.000	2233		-.297	.000	2233		-.318	.000	2222
	mean	eta^2	sig	n	mean	eta^2	sig	n	mean	eta^2	sig	n	mean	eta^2	sig	n
General health		.005	.001			.004	.002			.011	.000			.011	.000	
excellent/good	.07			1558	.06			1558	.10			1558	.11			1554
fair/poor	-.07			809	-.07			809	-.10			809	-.11			798
LLSI		.001	.178			.001	.218			.000	.910			.000	.487	
no	.01			1665	.01			1665	.03			1665	.03			1658
yes	.07			580	.06			580	.03			580	.07			572
LSI		.002	.022			.002	.018			.000	.975			.001	.114	
no	-.01			1371	-.02			1371	.03			1371	.01			1366
yes	.08			921	.07			921	.03			921	.08			912

Psychological characteristics (Table 6.11)

Table 6.11 concerns question 2: 'How are psychological characteristics bivariately related to each other and to health?'. There was a very strong positive relationship between *mastery* and *self esteem* (r>.6). Those with higher *mastery* and *self esteem* were more likely to report better health on all health measures than those with lower *mastery* or *self esteem.*

Table 6.11 Bivariate relationships between psychological characteristics ontological security, psychological characteristics and health

	Self Esteem				Mastery			
		r	sig	n		r	sig	n
Protection		.358	.000	2213		.302	.000	2250
Autonomy		.373	.000	2213		.324	.000	2250
Prestige		.414	.000	2213		.347	.000	2250
Scale		.453	.000	2204		.388	.000	2240
Mastery		.618	.000	2145		xxxx	xxx	xxxx
Self esteem		xxxx	xxx	xxxx		.618	.000	.2145
Number LSI		-.106	.000	2136		-.162	.000	2178
GP visits		-.192	.000	2195		-.166	.000	2244
Symptoms		-.347	.000	2186		-.357	.000	2228
Anxiety		-.535	.000	2101		-.481	.000	2133
Depression		-.564	.000	2121		-.503	.000	2147
	mean	eta^2	sig	n	mean	eta^2	sig	n
General health		.066	.000			.073	.000	
excellent/good	31.79			1489	20.66			1513
fair/poor	19.12			753	18.79			753
LLSI		.023	.000			.032	.000	
no	31.39			1596	20.39			1625
yes	29.68			536	19.05			544
LSI		.010	.000			.022	.000	
no	31.30			1317	20.42			1340
yes	30.32			851	31.30			872

Demographic characteristics (Table 6.12)

Tables 6.12-6.17 provide information on the third and fourth questions: 'How does ontological security bivariately relate to demographic, socio-economic and housing related characteristics?' and 'How do these relationships compare with the relationships between (a) psychological characteristics and demographic, socio-economic and housing related characteristics and (b) health and demographic, socio-economic and housing related characteristics?'

Older respondents tended to report more ontological security from the home but less *mastery* and worse health (except for anxiety) than younger respondents. Ontological security from the home was not associated with *sex*. Men tended to experience higher *mastery* and *self esteem* and better health than women. The *household types* of 'single alone' and 'couple alone' tended to receive more ontological security from the home than those living with others. Couples tended to report higher *mastery* and *self esteem* than singles. Respondents reporting good health were more likely to be living as a couple, mostly with others. Couples living alone tended to report the best mental health.

Table 6.12 Bivariate relationships between demographic variables ontological security, psychological characteristics and health

	Age				Sex					Household type						
					male	female				single alone	single others	couple alone	couple others			
		r	sig	n	mean	mean	eta^2	sig	n	mean	mean	mean	mean	eta^2	sig	n
Protection		.202	.000	2376	.00	.03	.000	.475	2377	.24	-.42	.28	-.14	.087	.000	2287
Autonomy		.218	.000	2376	-.02	.04	.001	.093	2377	.26	-.45	.26	-.15	.094	.000	2287
Prestige		.166	.000	2376	.05	.01	.001	.271	2377	.03	-.39	.26	.05	.057	.000	2287
Scale		.230	.000	2361	.01	.05	.000	.315	2362	.14	-.45	.33	-.04	.072	.000	2272
Mastery		-.091	.000	2294	20.41	19.76	.010	.000	2294	19.59	19.57	20.28	20.43	.014	.000	2213
Self esteem		.016	.452	2247	31.70	30.33	.019	.000	2248	30.29	29.56	31.68	31.54	.029	.000	2164
Number LSI		.400	.000	2309	.69	.83	.003	.006	2308	.97	.71	.89	.48	.033	.000	2220
GP visits		.206	.000	2380	2.89	4.17	.039	.000	2379	4.06	4.02	3.57	2.89	.014	.000	2283
Symptoms		.043	.037	2375	2.90	3.80	.028	.000	2374	3.57	4.08	3.29	3.10	.016	.000	2280
Anxiety		-.132	.000	2247	12.93	14.35	.034	.000	2249	13.66	15.03	13.18	13.67	.026	.000	2168
Depression		.141	.000	2277	11.04	11.58	.006	.000	2277	11.79	11.75	10.92	11.11	.013	.000	2193
	mean	eta^2	sig	n	%	%	phi	sig	n	%	%	%	%	v	sig	n
General health		.057	.000				.073	.000						.153	.000	
excellent/good	47.7			1586	69.2	62.1			1586	57.0	60.3	66.9	75.1			1534
fair/poor	56.6			853	30.8	37.9			853	43.0	39.7	33.1	24.9			800
LLSI		.114	.000													
no	47.0			1701	77.3	71.4	.067	.001	1700	64.7	78.4	70.9	83.0	.167	.000	1647
yes	60.5			602	22.7	28.6			602	35.3	21.6	29.1	17.0			568
LSI		.145	.000				.046	.026								
no	45.2			1396	62.1	57.5			1395	50.6	65.5	52.8	71.4	.185	.000	1360
yes	58.8			955	37.9	42.5			955	49.4	34.5	47.2	28.6			902

Socio-economic characteristics (Table 6.13)

Respondents with high socio-economic status tended to report higher ontological security from the home, *self esteem* and *mastery* and better health compared to respondents with low socio-economic status. Skilled non manual workers, however, tended to be worse off than skilled manual workers for ontological security, psychological characteristics and mental health. This may relate to different comparison groups as those in IIIN may aspire to be in I or II whereas IIIM may see themselves as better off than those in IV and V.

Table 6.13 Bivariate relationships between economic variables ontological security, psychological characteristics and health

	Adjusted household income				Social class (Registrar General)						
					I&II	IIIN	IIIM	IV&V			
		r	sig	n	mean	mean	mean	mean	eta^2	sig	n
Protection		.162	.000	1887	.09	-.09	.06	-.04	.007	.003	2081
Autonomy		.147	.000	1887	.07	-.09	.03	-.03	.005	.016	2081
Prestige		.172	.000	1887	.08	-.05	.07	-.06	.005	.017	2081
Scale		.175	.000	1880	.10	-.06	.06	-.04	.005	.015	2071
Mastery		.241	.000	1850	20.68	19.95	20.03	19.65	.015	.000	2043
Self esteem		.198	.000	1803	31.96	30.63	31.04	30.13	.021	.000	1986
Number LSI		-.175	.000	1840	.65	.61	.82	.84	.008	.001	2021
GP visits		-.197	.000	1883	2.74	3.59	3.43	4.37	.023	.000	2075
Symptoms		-.197	.000	1875	2.85	3.48	3.35	3.89	.021	.000	2060
Anxiety		-.145	.000	1798	13.22	13.94	13.52	14.31	.013	.000	1978
Depression		-.249	.000	1809	10.73	11.22	11.35	11.69	.012	.000	1994
	mean	eta^2	sig	n	%	%	%	%	v	sig	n
General health		.067	.000						.163	.000	
excellent/good	£1247			1288	76.3	71.0	61.2	57.3			1434
fair/poor	£865			628	23.7	29.0	38.8	42.7			679
LLSI		.035	.000						.100	.000	
no	£1201			1381	79.9	78.8	69.6	71.9			1523
yes	£893			452	20.1	21.2	30.4	28.1			482
LSI		.029	.000						.089	.001	
no	£1220			1147	65.1	65.1	58.6	54.9			1261
yes	£970			721	34.9	34.9	41.4	45.1			784

Dwelling style (Table 6.14)

Respondents with no gardens tended to receive less ontological security from the home and respondents with 'private gardens' tended to receive most. However differences were not significant on the *protection* and *autonomy* factors. Respondents with 'private gardens' tended to report most *self esteem* and *mastery* and those with 'no garden' tended to report least. Respondents with 'private gardens' tended to be healthiest and those with 'no garden' tended to be least healthy.

Respondents in detached houses tended to receive most ontological security from the home followed by respondents living in 'semi detached or terraced houses'. Respondents in 'detached houses' tended to be the healthiest on all variables except number of *LSI* and *LSI* where respondents living in 'sandstone tenement flats' tended to be most healthy. However this group scored relatively low on ontological security variables and psychological characteristics. Other flat dwellers tended to score low, or lowest on all variables.

Table 6.14 Bivariate relationships between dwelling style ontological security, psychological characteristics and health

	Garden						Dwelling type						
	none	shared garden	private garden				detached house	semi/terrace house	sandstone tenement flat	other flat			
	mean	mean	mean	eta^2	sig	n	mean	mean	mean	mean	eta^2	sig	n
Protection	-.03	-.03	.05	.002	.115	2332	.20	.03	-.02	-.04	.007	.001	2273
Autonomy	-.04	-.04	.05	.002	.077	2332	.19	.03	-.05	-.04	.007	.001	2273
Prestige	-.23	-.13	.14	.029	.000	2332	.41	.10	-.20	-.15	.048	.000	2273
Scale	-.15	-.08	.12	.013	.000	2316	.34	.08	-.12	-.10	.023	.000	2259
Mastery	19.33	19.71	20.29	.012	.000	2254	20.84	20.12	19.94	19.66	.013	.000	2194
Self esteem	29.73	30.51	31.29	.014	.000	2206	31.94	31.16	30.43	30.30	.014	.000	2157
Number LSI	1.03	.77	.71	.007	.000	2269	.66	.71	.62	.94	.010	.000	2216
GP visits	.457	4.00	3.29	.011	.000	2331	2.77	3.35	3.22	4.51	.017	.000	2272
Symptoms	.417	3.43	3.27	.010	.000	2333	2.81	3.25	3.31	3.91	.017	.000	2269
Anxiety	14.27	13.88	13.59	.004	.012	2211	12.91	13.85	13.87	13.95	.008	.001	2149
Depression	12.13	11.38	11.18	.010	.000	2239	10.54	11.35	11.14	11.79	.014	.000	2178
	%	%	%	v	sig	n	%	%	%	%	v	sig	n
General health				.133	.000						.148	.000	
excellent/good	50.1	65.9	68.5			1559	77.3	67.7	68.7	56.1			1524
fair/poor	49.9	34.1	31.5			827	22.7	32.3	31.3	43.9			34.4
LLSI				.083	.000						.108	.000	
no	65.2	73.5	75.8			1671	82.0	74.0	79.9	68.4			1635
yes	34.8	26.5	24.2			592	18.0	26.0	20.1	31.6			572
LSI				.077	.001						.089	.000	
no	50.3	59.6	61.3			1372	64.1	60.9	65.9	53.6			1343
yes	49.7	40.4	38.7			939	35.9	39.1	34.1	46.4			907

Home lifestyle characteristics (Table 6.15)

Respondents who reported more *consumer durables* were also more likely to report higher ontological security, *self esteem*, and *mastery* as well as better health than those with fewer consumer durables. Respondents residing in a dwelling with more *rooms* tended to achieve higher *prestige* and *scale* scores than living in a dwelling with fewer rooms. The number of rooms was not associated with *protection* or *autonomy*. Respondents who lived in dwellings with more rooms were more likely to experience higher *self esteem, mastery* and better health (except for *anxiety*).

Respondents who had lived in their homes longer tended to report more ontological security than more recent movers. There was no relationship with psychological characteristics. Those who had resided in their home longer tended to report higher *numbers of LSI*, more *LLSI* and more *LSI*, worse *general health* and more *doctors' visits* but less *anxiety* than more recent movers. There was no relationship with *symptoms* or *depression*.

Table 6.15 Bivariate relationships between home lifestyle characteristics ontological security, psychological characteristics and health

	Consumer durables				No. of rooms				Years occupied home			
		r	sig	n		r	sig	n		r	sig	n
Protection		.122	.000	2344		.029	.165	2336		.085	.000	2317
Autonomy		.118	.000	2344		.019	.357	2336		.090	.000	2317
Prestige		.272	.000	2344		.174	.000	2336		.076	.000	2317
Scale		.193	.000	2328		.116	.000	2320		.116	.000	2302
Mastery		.170	.000	2262		.144	.000	2254		-.025	.234	2239
Self esteem		.163	.000	2218		.144	.000	2210		.014	.500	2195
Number LSI		-.074	.000	2281		-.116	.000	2272		.195	.000	2255
GP visits		-.048	.020	2343		-.122	.000	2328		.076	.000	2316
Symptoms		-.067	.001	2346		-.081	.000	2334		-.020	.343	2319
Anxiety		-.064	.003	2222		-.031	.140	2213		-.089	.000	2198
Depression		-.163	.000	2250		-.124	.000	2240		.029	.169	2226
	mean	eta^2	sig	n	mean	eta^2	sig	n	mean	eta^2	sig	n
General health		.017	.000			.030	.000			.014	.000	
excellent/good	6.40			1565	4.72			1557	13.68			1548
fair/poor	5.98			837	4.12			828	17.03			824
LLSI		.006	.000			.018	.000			.024	.000	
no	6.34			1679	4.65			1671	13.54			1659
yes	6.07			597	4.15			594	18.46			590
LSI		.007	.000			.011	.000			.044	.000	
no	6.37			1379	4.66			1375	12.52			1365
yes	6.10			945	4.30			939	18.35			932

Dwelling worth (Table 6.16)

Dwelling value

Respondents who reported living in high value dwellings were likely to report more ontological security, *self esteem* and *mastery* than those living in low value dwellings. Inhabitants of high value dwellings also tended to report better health.

Respondents who thought their dwellings were worth more than those around tended to score higher on the ontological security variables than those who thought their dwellings were worth less. The same pattern was true for psychological characteristics. *Comparison of dwellings* was significantly related to all health variables except for *GP visits*. Those who reported their dwellings were worth less tended to be in the worst health. Those who reported that their dwellings were worth more tended to be in the best health except for *anxiety* where respondents who reported their dwellings were worth the same tended to be in the best health.

Table 6.16 Bivariate relationships between house worth, ontological security, psychological characteristics and health

	Dwelling value				Comparison with dwellings in the same street					
					worth more	worth same	worth less			
		r	sig	n	mean	mean	mean	eta^2	sig	n
Protection		.116	.000	2152	.08	.04	-.29	.010	.000	2287
Autonomy		.102	.000	2152	.09	.03	-.34	.013	.000	2287
Prestige		.271	.000	2152	.33	.02	-.57	.054	.000	2287
Scale		.200	.000	2141	.24	.04	-.52	.032	.000	2273
Mastery		.177	.000	2091	20.82	19.98	18.56	.026	.000	2209
Self esteem		.173	.000	2044	32.09	30.87	28.44	.029	.000	2159
Number LSI		-.107	.000	2096	.68	.75	1.05	.005	.005	2222
GP visits		-.130	.000	2151	3.49	3.53	4.07	.001	.512	2279
Symptoms		-.156	.000	2142	3.27	3.37	4.19	.006	.001	2275
Anxiety		-.106	.000	2046	13.77	13.66	14.75	.006	.002	2166
Depression		-.194	.000	2067	10.98	11.29	12.62	.014	.000	2189
	Mean	eta^2	sig	n	%	%	%	v	sig	n
General health		.046	.000					.100	.000	
excellent/good	57K			1459	73.0	65.8	52.3			1535
fair/poor	42K			730	27.0	34.2	47.7			791
LLSI		.014	.000					.077	.001	
no	54K			1553	79.5	74.0	64.8			1642
yes	45K			529	20.5	26.0	35.2			569
LSI		.011	.000					.063	.012	
no	54K			1274	63.0	59.9	49.7			1345
yes	48K			849	37.0	40.1	50.3			910

Dwelling and area conditions (Table 6.17)

The relationship between ontological security and dwelling conditions was particularly strong (r>.3) compared to relationships between ontological security and other variables. Respondents living in superior *dwelling conditions* tended to have higher ontological security, *mastery* and *self esteem* and better health than worse dwelling conditions. *Dwelling conditions* were not, however, related to *number of LSI, LLSI* and *LSI.*

Similarly respondents with better *area conditions* and *area amenities* tended to have higher ontological security, psychological characteristics and better health than those with worse area conditions and amenities. Respondents with higher ontological security scores tended to report more *neighbours with whom favours were exchanged.* Respondents with more neighbours with whom they exchanged favours also tended to have more *self esteem* and *mastery.* The number of neighbours was only related to three health variables: *symptoms, depression* and *general health.* On all three measures, respondents with more favour exchanging neighbours tended to report better health.

Table 6.17 Bivariate relationships between dwelling and area conditions ontological security, psychological characteristics and health

	Problems with dwelling conditions				Problems with area conditions				Problems with area amenities				Number of neighbours exchanging small favours			
		r	sig	n		r	sig	n		r	sig	n		r	sig	n
Protection		-.338	.000	2253		-.265	.000	2212		-.144	.000	2272		.091	.000	2258
Autonomy		-.344	.000	2253		-.257	.000	2212		-.128	.000	2272		.072	.001	2258
Prestige		-.433	.000	2253		-.305	.000	2212		-.142	.000	2272		.133	.000	2258
Scale		-.416	.000	2243		-.301	.000	2205		-.169	.000	2260		.116	.000	2245
Mastery		-.246	.000	2189		-.236	.000	2149		-.148	.000	2209		.075	.000	2186
Self esteem		-.222	.000	2138		-.202	.000	2106		-.140	.000	2161		.082	.000	2143
Number LSI		-.002	.923	2182		.081	.000	2144		.067	.002	2205		-.028	.183	2204
GP visits		.050	.017	2239		.149	.000	2197		.050	.018	2263		-.037	.079	2255
Symptoms		.213	.000	2231		.250	.000	2193		.110	.000	2257		-.064	.002	2255
Anxiety		.228	.000	2136		.228	.000	2097		.110	.000	2156		-.038	.082	2147
Depression		.202	.000	2162		.213	.000	2117		.153	.000	2177		-.115	.000	2174
	mean	eta^2	sig	n	mean	eta^2	sig	n	mean	eta^2	sig	n	mean	eta^2	sig	n
General health		.018	.000			.038	.000			.008	.000			.002	.020	
excellent/good	6.36			1525	21.18			1488	-.09			1538	2.74			1525
fair/poor	6.93			760	23.38			755	.09			775	2.45			780
LLSI		.001	.242			.007	.000							.000	.373	
no	6.50			1632	21.63			1599	-.08	.006	.000	1641	2.66			1625
yes	6.62			541	22.64			537	.09			553	2.52			570
LSI		.000	.970			.007	.000			.003	.005			.001	.273	
no	6.54			1342	21.54			1323	-.08			1357	2.69			1334
yes	6.56			871	22.48			856	.04			881	2.53			901

Discussion

I will summarise this section by noting which variables were related to ontological security, psychological characteristics and health. Then I will answer the questions asked of the bivariate analysis. Finally I will discuss the conclusions so far and the next steps.

Which variables were related to ontological security?

The ontological security variables were related to all variables except long standing illness variables, *GP visits* and *sex*. *Autonomy* and *protection* were additionally not related to number of *rooms* and having a *garden*; they were negatively related to *LSI*. The strongest relationships seemed to be with psychological characteristics and *dwelling conditions*.

Which variables were related to psychological characteristics?

Psychological characteristics were significantly related to all variables except *years occupied the home,* and *self esteem* was not related to *age*. For most housing related variables the relationship with *prestige* from the home was stronger than general *self esteem* and *mastery*.

Which variables were related to health?

General health was significantly related to all variables tested. *Depression* and *symptoms* were related to all variables apart from *years occupied the home*. *Anxiety* was related to all variables apart from number of *rooms* in the home and number of *neighbours exchanging small favours*. *GP visits* were related to all variables except for ontological security, the *number of neighbours exchanging favours* and *comparison of house value*. Long standing illness related variables were most strongly related to *age* and *household type*. They were not significantly related to *dwelling conditions*, *number of neighbours exchanging favours* and ontological security (except for the inverse relationship mentioned earlier).

Answering the questions

I will now answer the four questions set at the beginning of this section. Firstly ontological security was strongly related to psychological characteristics and some health variables especially those relating to mental health. It was not related to chronic illness. Secondly psychological characteristics were highly correlated with

each other and were also related to all health variables. Thirdly ontological security was related to most demographic, socio-economic and housing related variables. Fourthly psychological characteristics were also related to most of these variables but not always with as high correlations as prestige from the home; several, and often all, health variables were associated with every variable analysed. The directions of the relationship with ontological security were usually, but not always, in the same direction as the relationships with psychological characteristics and health. Differences emerged, for example, with respect to social class and dwelling style.

These results, together with the information presented in sections 6.3 and 5.2 suggest that it is not implausible that ontological security from the home is part of the pathway between housing tenure and health. However ontological security is not likely to explain the most variance; there are several candidates that are more likely to play an important role: income, self esteem, household type, dwelling value and area conditions were strongly related to tenure and all health variables ($p<.001$). The apparent relationships between ontological security and tenure and ontological security and health could be due to the relationships between ontological security and income, self esteem, dwelling value or area conditions. Nevertheless it is still possible that ontological security may have an independent role.

Where next?

From bivariate analysis it is not possible to say with certainty which are the most important variables in the relationship between housing tenure and health due to interrelatedness (for example, household type and years occupying the home are strongly related to age, and income, dwelling style, consumer durables, house value and social class are all indicators of affluence). Further understanding may be provided through multivariate analysis.

It does appear that ontological security from the home is related to housing and health. In the next section I focus on the relationship between tenure and ontological security. I use multivariate analysis to look more closely at predictors of ontological security. Is a respondent's ontological security score driven by their demographic or

psychological characteristics, or is their housing, and particularly their housing tenure, important?

6.5 What predicts ontological security?

In this section multivariate analysis is used to examine which variables are the best predictors of the three ontological security factors. This is necessary to find out the sort of role that ontological security may play in the relationship between tenure and health. In the previous section it was shown that *protection* and *autonomy* had different bivariate relationships with many variables to *prestige*. They were also closely correlated to the *scale*. Thus the separate factors will be used rather than the summary *scale* variable. Table 6.18 summarises the independent predictor variables that will be compared. Besides housing tenure there are 6 types of variables: demographic, psychological, economic, dwelling, dwelling worth, dwelling time and area.

Table 6.18 Summary of predictor variables

Characteristic	Continuous	Categorical
Housing tenure		(2 categories) Owner Social renter
Demographic	Age	Sex Male Female Household type (4 categories) Couple and others Couple alone Single with others Single alone
Psychological	Mastery Self esteem	
Economic	Household monthly income	Own Social Class (4 categories) I&II IIIN IIIM IV&V
Dwelling	Dwelling conditions	Dwelling type (4 categories) Detached house Semi-detached /terraced house Sandstone tenement flat Other flat Garden (3 categories) Private garden Communal/shared garden No garden
Dwelling worth	Consumer durables Dwelling value Number of rooms	Comparison with nearby homes (3 categories) Worth more Worth the same Worth less
Dwelling time	Number of years occupied dwelling	
Area	Number of neighbours exchange favours Area conditions Area amenities	

Description of the analysis

Backwards elimination of non significant variables was used to find significant predictors of dependent variables throughout the multivariate analysis. Forward selection of variables was rejected because it placed too much control in the hands of the researcher rather than on the data itself. It could result in less important variables being included because they are seen as likely to be of interest from previous

literature. As this was the first time ontological security from the home and health had been examined statistically I decided that the results should be data driven. Marsh, Gordon et al. (1999) have used a comparable methodology. The decision was taken not to search for interactions between the variables to avoid data trawling. Dunn and Hayes (2000) similar analysis of the effects of tenure and health also did not include interactions.

The three ontological security factors are continuous variables so general linear modelling (GLM) was used in the analysis. The SPSS GLM procedure was preferred to multiple regression because it automates the tedious process of forming dummy variables for multiple category variables. The following procedures were used in the analysis. After backward elimination a model was found where all variables significantly predicted the factor ($p<.05$). While variables were being removed the number of cases in the model was held constant so that differences could be attributed to the variables rather than idiosyncrasies of cases included or excluded.

When the variables were combined in multivariate analysis nearly half the cases were missing (see Appendix 5). To assess the generalisability of the results the model was therefore rerun with only significant independent predictors; this increased the number of cases available for the analysis.

As an illustration, table 6.19 shows the variables that were significant predictors of the protection factor. On the left hand side the B, the eta^2 and the significance value are shown for the model with all possible variables available to be included. On the right hand side is shown the model in which only significant predictor variables were included. The number of cases increases by nearly 300 and there is very little difference in the adjusted R-square. The model predicts about 30% of the variance in the factor.

The B value provides information on the direction of the effect and the eta^2 provides information on the size of the effect. The B value is an estimate of the change in the dependent variable that can be attributed to a change of one unit in the independent variable. In simple GLM models it is easily possible to infer the size of the change in the dependent variable. However in this analysis some continuous independent

variables are transformed to reduce skew so it is not easy to discuss absolute changes. (In chapter 7 the relationships become more convoluted in the models where the dependent variables are also transformed). For categorical variables, one category acts as a reference category and all other categories are compared with that category. The B value of the reference category is 0. The eta^2 can be used to compare relative differences between variables. In this analysis relative differences are more important than actual changes in the dependent variable. There is little difference between B, eta^2 and significance values in the two models. All variables remain significant predictors.

The next stage was to see which of these significant variables were the strongest predictors by sorting them in terms of eta^2. In table 6.20, for example, the significant predictors in table 6.19 (*household type, self esteem, dwelling conditions, social class, dwelling type, sex, neighbourly favours, amenities desert, mastery and area conditions*) are sorted in order of their eta^2 values. *Household type* has the strongest relationship with *protection* from the home and *area conditions* has the weakest relationship with *protection* from the home as measured by eta^2.

In the final stage the relationship between tenure and each factor was explored. Firstly tenure was entered alone into a model. Then the variable that was the strongest predictor of the factor was entered and the difference it made to the relationship between tenure and the factor was noted. The next strongest predictor was then added and the further change in tenure noted. It was then possible to ascertain which variables made the largest changes to the relationship between tenure and the factor by comparing the B value of tenure before and after the variable was added to the model.

B values were used rather than eta^2 to describe the change in the size of the relationship between tenure and the factors because firstly tenure is being compared with itself rather than with other variables and secondly B values tend to be larger than eta^2 values once a variable approaches non significance; additionally small B values are easier to deal with from SPSS output. This could be important because sometimes entering a variable could increase rather than reduce the predictive ability of tenure. Therefore a variable that reduced the B value even after tenure becomes

non significant could be important for the eventual significance or non significance of tenure. Again the number of cases was held constant so that the change in relationship is due to the variable rather than the cases in the model.

To provide an example, in table 6.21, the B values of tenure, as variables are added into the model, are shown in column 2, the eta^2 values of tenure are shown in column 3, the significance of tenure is shown in column 4 and the change in tenure B, as each different variable is included in the model, is shown in column 5. Without any other variables housing tenure has a B value of .26 (column 2). When *household type* is added into the model tenure has a B value of .25. Thus there is a difference of .01 in the B value of tenure after household type is added into the model (column 5) suggesting a small decline in the predictive ability of tenure. When *self esteem* is added into the model the tenure B changes from .25 to .16 so tenure B declines by .09. Thus it appears that *self esteem* makes a larger difference to the size of the relationship between tenure and *protection* from the home than does *household type.*

I now discuss the results of the multivariate analysis discussing each factor in turn. In the following commentary all relationships mentioned are significant at the 0.05 level unless I state otherwise.

Protection from the home

Women, respondents classified as manual *social class*, respondents living alone or just with a partner and respondents living in a detached house were more likely to report higher *protection* from the home than their respective corresponding categories. Respondents reporting high *protection* were also more likely to report high *mastery* and *self esteem,* more *neighbours who exchange favours*, as well as better *dwelling conditions, area conditions* and area *amenities* (table 6.19). Table 6.20 shows the most important predictor was *household type* (eta^2=.112). The next most important predictors were *self esteem* and *dwelling conditions*. *Tenure* was not a significant independent predictor. Table 6.21 shows which variables were reducing the relationship between *tenure* and *protection* from the home. Alone in the model *tenure* predicted 16% of the variance. However after controlling for *dwelling conditions*, tenure was no longer significant; tenure remained non significant when other variables were added to the model. In the tenure B change

column of table 6.21 it appears that *dwelling conditions* made the largest difference to the size of the relationship between *tenure* and *protection* although *self esteem* also made a substantial difference.

Although *household type* was an important predictor of protection (Eta^2=.112) it made little difference to the relationship between tenure and protection (tenure B change=.01). This may be because *protection* and *tenure* are related to *household type* in different ways. Respondents living alone or just with a partner have higher *protection* scores (perhaps reflecting privacy in the home) whereas single people are more likely to be social renters (perhaps reflecting economic capability). Thus social renters feel less protected in their home due to poor conditions of their houses and their lower self esteem in general.

Table 6.19 Multivariate predictors of protection from the home

	All variables			Significant only		
N	1273			1562		
Adj R Square	.309			.300		
	B*	Eta^2	Sig.	B	Eta^2	Sig.
Intercept	-3.40	.085	.000	-3.37	.084	.000
Sex						
female	.13	.006	.004	.14	.007	.001
male	.00			.00		
Household type		.108	.000		.112	.000
living alone	.63	.078	.000	.61	.071	.000
single and others	-.03	.000	.620	-.11	.002	.067
couple alone	.43	.047	.000	.42	.044	.000
couple and others	.00			.00		
Mastery	.03	.007	.003	.02	.005	.005
Self esteem	.05	.058	.000	.05	.049	.000
Social class		.016	.000		.012	.000
I &II	-.24	.011	.000	-.18	.006	.002
IIIN	-.25	.011	.000	-.21	.008	.001
IIIM	-.07	.001	.340	-.02	.000	.790
IV&V	.00			.00		
Dwelling type		.013	.001		.008	.007
detached house	.29	.011	.000	.22	.006	.002
semi/terraced	.06	.001	.305	.04	.000	.484
sandstone tenement flat	.13	.002	.094	.09	.001	.183
other flat	.00			.00		
Dwelling conditions	-3.15	.026	.000	-3.42	.030	.000
Neighbourly favours	.06	.003	.046	.07	.006	.003
Area conditions	-.01	.005	.013	-.01	.004	.019
Amenities desert	-.05	.004	.023	-.06	.006	.003

*Reference category B=0

Table 6.20 Multivariate predictors of protection in order of size of relationship

N=1562	Eta^2	Sig.
Household type	.112	.000
Self esteem	.049	.000
Dwelling conditions	.030	.000
Social class	.012	.000
Dwelling type	.008	.007
Sex	.007	.001
Neighbourly favours	.006	.003
Amenities desert	.006	.003
Mastery	.005	.005
Area conditions	.004	.019

Table 6.21 Changes in the relationship between tenure and protection with the addition of other predictors

N=1525	Tenure B	Eta^2	Sig.	Tenure B change
Tenure	.26	.016	.000	
Household type	.25	.014	.000	.01
Self esteem	.16	.007	.001	.09
Dwelling conditions	.03	.000	.519	.13
Social class	.06	.001	.238	-.03
Dwelling type	.04	.000	.481	.02
Sex	.05	.001	.381	-.01
Neighbourly favours	.04	.000	.420	.01
Amenities desert	.04	.000	.459	.00
Mastery	.03	.000	.551	.01
Area conditions	.00	.000	.976	.03

Autonomy from the home

The analysis was repeated for *autonomy* from the home (table 6.22). Very similar results were obtained, the main difference being that *neighbours exchanging favours* and *area amenities* were not significant independent predictors. When respondents thought about their home being a protected private place they thought more about the area than when they thought about feeling in control in the home. The exclusion of these two variables meant that more cases could be added to the second model. In the model with more cases single people living with others reported significantly less *autonomy* from the home. This may be because single people have less support in decision making whereas a couple can rely on each other to support each other's plan in face of opposition by other household members. As with *protection*, *household type*, *self esteem* and *dwelling conditions* were the most important

predictors of *autonomy* (table 6.23) and *dwelling conditions* followed by *self esteem* explained the relationship between *tenure* and *autonomy* (table 6.24).

Table 6.22 Multivariate predictors of autonomy from the home

	All variables			Significant only		
N	1273			1649		
Adj R^2	.320			.302		
	B	Eta^2	Sig.	B	Eta^2	Sig.
Intercept	-3.54	.095	.000	-3.55	.093	.000
Sex						
female	.15	.008	.001	.15	.008	.000
male	.00			.00		
Household type		.114	.000		.114	.000
living alone	.64	.083	.000	.62	.072	.000
single and others	-.05	.001	.426	-.14	.003	.017
couple alone	.42	.046	.000	.39	.038	.000
couple and others	.00			.00		
Mastery	.04	.014	.000	.03	.010	.000
Self esteem	.05	.057	.000	.05	.050	.000
Social class		.018	.000		.010	.001
I&II	-.27	.014	.000	-.19	.007	.001
IIIN	-.26	.013	.000	-.19	.007	.001
IIIM	-.10	.001	.175	-.05	.000	.443
IV&V	.00			.00		
Dwelling type		.013	.001		.006	.016
detached house	.30	.012	.000	.21	.006	.001
semi/terraced	.07	.001	.206	.07	.001	.137
sandstone tenement flat	.11	.002	.152	.06	.001	.334
other flat	.00			.00		
Dwelling conditions	-3.23	.028	.000	-3.62	.034	.000
Area conditions	-.01	.005	.012	-.01	.004	.012

Table 6.23 Multivariate predictors of autonomy in order of size of relationship

N=1649	Eta^2	Sig.
Household type	.114	.000
Self esteem	.050	.000
Dwelling conditions	.034	.000
Dwelling type	.016	.006
Mastery	.010	.000
Social class	.010	.001
Sex	.008	.000
Area conditions	.004	.012

Table 6.24 Changes in the relationship between tenure and autonomy with the addition of other predictors

N=1608	Tenure B	Eta^2	Sig.	Tenure B change
Tenure	.26	.016	.000	
Household type	.26	.016	.000	.00
Self esteem	.18	.009	.000	.08
Dwelling conditions	.04	.001	.365	.14
Dwelling type	.01	.000	.056	.03
Mastery	.00	.000	.965	.01
Social class	.05	.001	.369	-.05
Sex	.06	.001	.272	-.01
Area conditions	.03	.000	.536	.03

Prestige from the home

When predicting *prestige* (table 6.25) there was little difference in the number of cases once non significant variables were eliminated. This is due to there being more independent predictors and more of these being money-related, which tended to be poorly answered. The model of prestige accounted for more variance (nearly 40%) than the *protection* and *autonomy* models.

Respondents living alone or just with a partner tended to receive more *prestige* from their homes than other *household types*. Respondents with higher *mastery* and *self esteem* were more likely to receive more *prestige*. Respondents living in detached houses and who thought their homes were worth more than other dwellings in their street tended to receive more *prestige*. Respondents living in higher *value* dwellings and reporting more *consumer durables* in the home were also more likely to report more prestige. Respondents with good *dwelling conditions*, *area conditions* and *area amenities,* as well as more *neighbours exchanging favours* tended to receive more *prestige*. Recent movers received more *prestige* from their homes than longer established residents.

As with *protection* and *autonomy* the three most important predictors of *prestige* were *household type*, *self esteem* and *dwelling conditions* (table 6.26). *Household type* did make some difference to the strength of the relationship between *tenure* and *prestige* from the home (table 6.27). In bivariate analysis 'couples alone' had higher *prestige* and were more likely to be owners and single people living with others had lower *prestige* and were more likely to be social renters. *Household type*, *self esteem*

and *dwelling conditions* alone did not explain the tenure difference in *prestige* although these variables were responsible for the relationship between *tenure* and *protection* and *autonomy*. *Dwelling value* was also important in reducing the relationship between *tenure* and *prestige*. Thus owners report more *prestige* from the home because they live in better condition homes that are higher value. They have higher *self esteem* and they are more likely to be just living with a partner.

Table 6.25 Multivariate predictors of prestige from the home

	All variables			Significant only		
N	1273			1304		
Adj R^2	.404			.392		
	B	Eta^2	Sig.	B	Eta^2	Sig.
Intercept	-3.92	.124	.000	-4.00	.127	.000
Household type		.062	.000		.060	.000
living alone	.37	.031	.000	.36	.028	.000
single and others	-.11	.002	.084	-.12	.003	.058
couple alone	.31	.030	.000	.31	.028	.000
couple and others	.00			.00		
Mastery	.02	.006	.008	.02	.005	.010
Self esteem	.05	.064	.000	.05	.059	.000
Social class		.020	.000		.020	.000
I &II	-.29	.017	.000	-.29	.017	.000
IIIN	-.20	.009	.001	-.20	.009	.001
IIIM	-.09	.002	.170	-.08	.001	.209
IV&V	.00			.00		
Income	-.01	.011	.000	-.01	.009	.001
Dwelling type		.009	.012		.007	.033
detached house	.27	.008	.001	.24	.006	.005
semi/terraced	.10	.003	.052	.09	.002	.080
sandstone tenement flat	.11	.002	.123	.10	.002	.122
other flat	.00			.00		
Dwelling comparison		.010	.002		.011	.001
worth more	.32	.009	.001	.33	.010	.000
worth same	.18	.004	.026	.19	.004	.019
worth less	.00			.00		
Dwelling conditions	-3.47	.036	.000	-3.78	.042	.000
Consumer durables	.07	.015	.000	.07	.014	.000
Dwelling value	.00	.018	.000	.00	.017	.000
Dwelling years	-.03	.005	.015	-.03	.005	.013
Neighbourly favours	.05	.004	.030	.06	.004	.025
Area conditions	-.01	.005	.009	-.01	.004	.018
Amenities desert	-.06	.007	.003	-.06	.006	.005

Table 6.26 Multivariate predictors of prestige in order of size of relationship

N=1304	Eta^2	Sig.
Household type	.060	.000
Self esteem	.059	.000
Dwelling conditions	.042	.000
Social class	.020	.000
Dwelling value	.017	.000
Consumer durables	.014	.000
Dwelling comparison	.011	.001
Income	.009	.001
Dwelling type	.007	.033
Amenities desert	.006	.005
Mastery	.005	.010
Years there	.005	.013
Neighbourly favours	.004	.025
Area conditions	.004	.018

Table 6.27 Changes in the relationship between tenure and prestige with the addition of other predictors

N=1275	Tenure B	Eta^2	Sig.	Tenure B change
Tenure	.54	.072	.000	
Household type	.45	.049	.000	.09
Self esteem	.35	.035	.000	.10
Dwelling conditions	.17	.008	.001	.18
Social class	.23	.014	.000	-.06
Dwelling value	.09	.002	.116	.14
Consumer durables	.06	.001	.275	.03
Dwelling comparison	.04	.001	.418	.02
Income	.09	.002	.111	-.05
Dwelling type	.10	.002	.093	-.01
Amenities desert	.11	.003	.071	-.01
Mastery	.11	.003	.064	.00
Years there	.11	.003	.054	.00
Neighbourly favours	.11	.003	.054	.00
Area conditions	.09	.002	.129	.02

Discussion

In summary, the main links between tenure and the ontological security factors are that owners and people who report higher scores on the variables have higher self esteem and they live in better condition homes. Prestige from the home is obtained through a higher value home and living with just a partner.

Living with just a partner may reflect two aspects that may increase the ontological security available from the home. Firstly being part of a couple may mean that one

feels part of the home through making decisions over it rather than the decisions being due to another household member, such as a parent, thus its prestige is more a reflection of oneself rather than someone else. Without children, or elderly parents, in the home it may be easier to keep the home in a good state of repair and so it could be an asset to display to others. In this way 'couples alone' may have higher ontological security from their home than couples living with others. Secondly Gurney's (1996) work on the meaning of home suggested that the people there are most important; this may explain why 'couples alone' had higher scores than 'singles alone'. For a couple, the home may be a source of prestige because they know they are important to someone in the home. This in turn may mean they invest in the home, which may further increase its prestige. Single people are likely to turn elsewhere for companionship. In Gurney's work, single people often saw the place they lived as just a place to sleep rather than a home.

Inhabitants who received more prestige from their homes tended to have lived in them for fewer years. Prestigious homes may be acquired after moving up the housing market or persuading the council to provide more suitable accommodation. The length one has lived in a dwelling and household type are associated with age. These variables and not age were independent predictors of ontological security. Therefore the reason that older people report higher security is likely to be because they are more likely to live alone or just with a partner and have lived in their dwelling longer. However this proposition was not directly tested.

Bivariately there was no sex difference in ontological security from the home. However women reported higher protection and autonomy in the multivariate analysis. More women in the sample were social renters thus the relationship between tenure and ontological security increased slightly when sex was entered into a model. Women may feel more in control of the home because they are more likely to be in charge of the housework and perhaps the furnishings. Women may feel the home is a place of protection, as they may feel more vulnerable in other places such as on public transport.

One perhaps surprising finding was that ontological security from the home scores were higher in manual workers than non manual workers; Antonovsky suggested

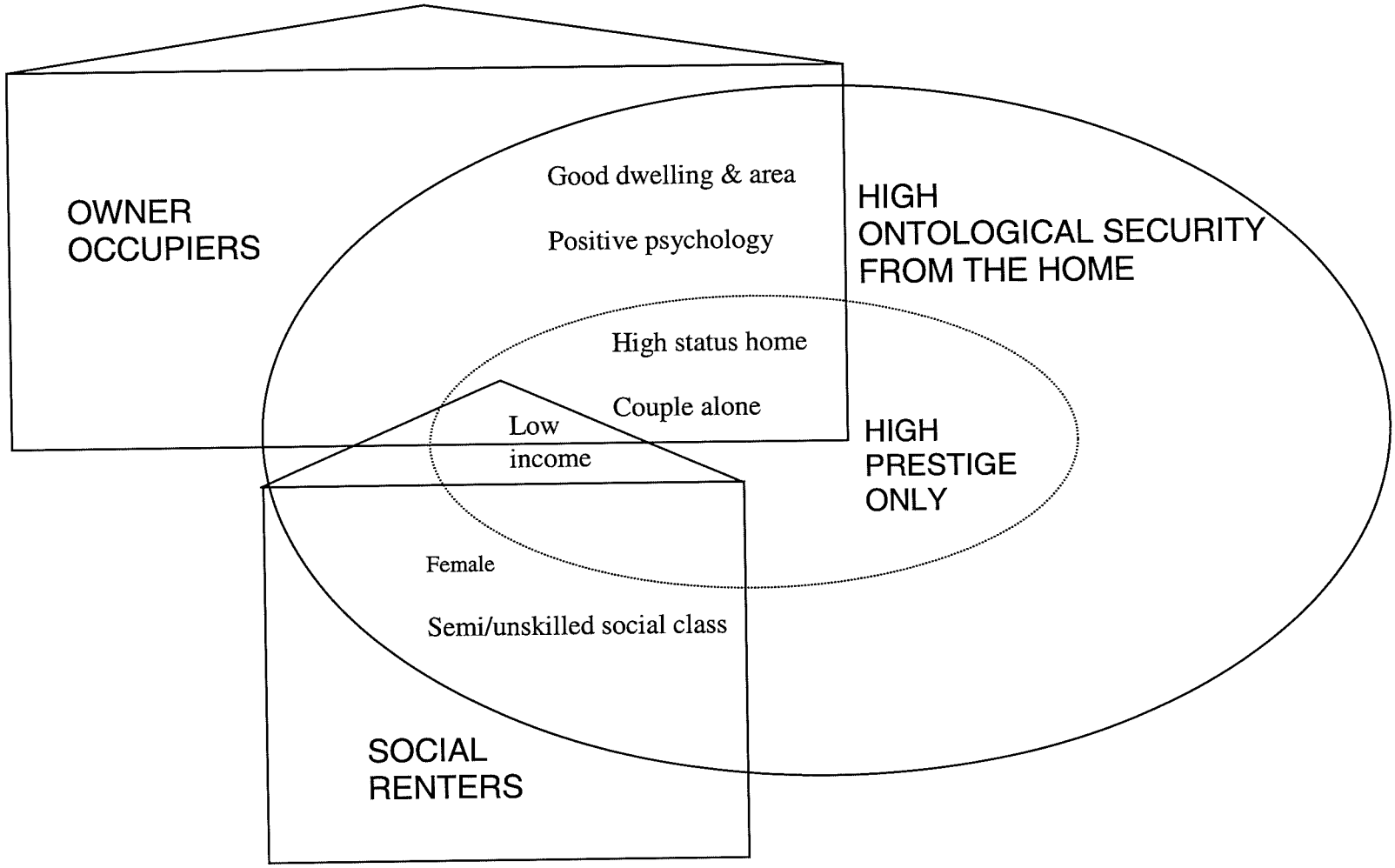
that people in lower social classes were likely in general to feel less secure (Antonovsky 1979). Possibly respondents in manual work may not gain prestige from their work and so may gain more from their home. Respondents in low social classes may not have enough financial resources to put into other areas like holidays or hobbies and so prestige can only be gained from the home. Manual workers may spend more time in the local area and home, which may increase familiarity with the home, which may then lead to greater feelings of protection, autonomy and prestige.

The relationship between tenure and the ontological security variables increased when social class was added to the model. This is because manual workers who score higher on ontological security variables are more likely to be renters. So renters may have higher ontological security scores than otherwise because they are in manual social classes. Feeling secure in the home may be an important buffer for those in low social classes against the rest of their lives, which are insecure. This could imply that social housing is having a redistributive effect in that despite a low socio-economic status, social renters still have homes that can provide them with psychosocial benefits.

Summary

Owner occupiers and social renters both have certain characteristics that are shared by respondents with high ontological security from the home. Owner occupiers live in nice dwellings in good neighbourhoods. They also have high self esteem and mastery. Owner occupiers also have high value dwellings and are more likely to be living alone with a partner. These are also associated with high prestige. Social renters also have some characteristics that are associated with higher ontological security scores. They are more likely to be in social class IV&V and are more likely to be women (associated with high protection and autonomy only). Social renters also have low incomes. Low incomes are associated with receiving high prestige from one's home. These relationships are summarised in figure 6.2 which shows the different characteristics of owner occupiers and social renters (house shapes) that provide ontological security (oval shape). Prestige is differentiated, as extra characteristics are associated with prestige. Owner occupiers may have higher ontological security through their housing whereas social renters do so more through demographic characteristics.

Fig 6.2 Diagram showing the relationships between tenure and ontological security



The finding that some groups who are traditionally in worse health report higher ontological security from their homes (e.g. low social class) may have implications for the relationship between ontological security and health. It may be that part of the reason for weak bivariate relationships between ontological security from the home and health was that those who score higher are in worse health for other reasons. Alternatively the relationships between ontological security from the home and health could be due to the association between ontological security and other indicators of good housing such as housing conditions. To test these possibilities in the next chapter I present the results of multivariate analysis predicting health.

In this chapter I have shown that respondents answered the scale measuring ontological security from home satisfactorily. In factor analysis this ontological security from home scale was found to comprise of three factors corresponding to protection, autonomy and prestige. Owners scored higher on these three factors than social renters. Outright owners had the highest scores but confidence intervals were too wide for meaningful within tenure analysis. In bivariate analysis ontological security was significantly associated with psychological characteristics, the majority of housing characteristics, age, household type, socio-economic characteristics and some health variables. In multivariate analysis it became apparent that tenure was related to ontological security from the home principally through self esteem and dwelling conditions. The value of the dwelling was also important for prestige.

Chapter 7 Predictors of health and psychological characteristics

At the end of chapter 6, I explored the relationship between tenure and ontological security. In this chapter I focus on the health part of the tenure and health relationship. I attempt to answer two questions in this chapter. Firstly I consider which variables are the best predictors of health and secondly I examine which of these variables best explain the relationship between tenure and health. As psychological characteristics are strong predictors of health, models of self esteem and mastery as dependent variables were also developed. I used logistic regression to analyse models predicting *general health*, *LSI* and *LLSI* and GLM for *number of LSI*, *GP visits*, *symptoms*, *anxiety*, *depression*, *self esteem* and *mastery*. At the end of this section I summarise the results of the multivariate analyses of health, psychological characteristics and ontological security and I make suggestions about the relationship between tenure and health.

7.1 Ontological security factors and health

To decide whether it was worth including ontological security factors in the models, I began by running models where each health and psychological characteristic was the dependent variable, with only the three factors as predictors and no other controls (table 7.1). Partial correlations, rather than GLM, were used for the continuous variables as they provide both the size and the direction of the relationship in one statistic. The following significant relationships were found. Respondents with more *protection* tended to report fewer *symptoms*, and less *anxiety* and *depression*. Respondents with higher *autonomy* tended to have higher *mastery* but also higher *symptoms*. Respondents with higher *prestige* tended to have better health on all measures except *LLSI* and *GP consultations*. Respondents with more *prestige* also tended to have higher *mastery* and *self esteem*. The ontological security variables were only subsequently entered into the multivariate analyses, predicting health and psychological characteristics, when they were significant predictors in this preliminary analysis.

Table 7.1 Relationships between each factor and health, controlling for the other factors

	Protection		Autonomy		Prestige	
	OR	sig	OR	sig	OR	sig
Fair/poor general health	.83	.1909	1.30	.0935	.73	.0000
Presence of a LLSI	1.10	.5487	1.07	.6908	.88	.1126
Presence of a LSI	1.04	.8067	1.25	.1462	.82	.0064
	r	sig	r	sig	r	sig
Number of LSI	.017	.433	.019	.377	-.063	.003
GP visits	-.014	.510	.022	.300	-.035	.090
symptoms	-.066	.001	.042	.042	-.093	.000
Anxiety	-.046	.029	.002	.935	-.119	.000
Depression	-.088	.000	.041	.052	-.145	.000
Self esteem	.015	.496	.037	.085	.218	.000
Mastery	-.019	.359	.066	.002	.167	.000

7.2 What predicts health?

In this section I present the results of the models predicting health and also explore which of the significant predictors explained the relationship between tenure and health.

Statistical analysis

The multivariate analysis was conducted in the same way as in section 6.5: all variables were entered into the model and then non significant variables were removed until only significant variables were left. The model was then extended to include more cases, by including only independent predictors, to increase generalisability.

For the categorical health variables logistic regression was used, rather than GLM, by means of the following procedure. All predictor variables were entered into the model and then non significant variables were removed using backwards elimination. As in the GLM analysis, the model was then extended to more cases by only entering significant variables. If a variable then became non significant it was removed and the model was rerun until there were only significant variables in the model. As each variable was removed cases were added. Significant variables were then sorted in order of significance using the Wald statistic. The Wald statistic tests the null hypothesis that the population coefficient is 0. It is a standardised statistic; consequently it can be used to compare variables on different scales.

As an illustration, the significant variables in the logistic regression analysis of *general health* are shown in table 7.2. OR stands for odds ratios (the ratio of being in fair or poor health compared to excellent or good health). Odds ratios greater than 1 signify that the chances of fair or poor health are increased. For continuous variables, odds ratios mean the increase in odds for every unit increase in the continuous variable. The odds ratio for age is 1.03. This means that for every extra year of age the chances of reporting fair or poor health increase by 1.03 or 3%. So, for example, a person aged 54 would have an increased chance of reporting fair or poor health of 1.06 compared with a person aged 52 (all other things being equal). For income the odds ratios are more complex as this variable was transformed using the square root. The odds ratio for income is .97. The square of .97 is .94. This means that for every extra £1 of income the likelihood of reporting fair or poor health rather than excellent or good health is reduced by .06.

The size of the odds ratios is discussed although this information must be treated with caution. Problems stem from the reporting of odds ratios rather than relative risk because the study is cross sectional. A longitudinal study can estimate relative risks by studying the incidence of a phenomenon compared to a base line. Burrows notes that:

> "When the prevalence of an outcome is high logistic regression models can provide inaccurate estimates... although we can be confident that a parameter estimate of 5.65 is greater than a parameter estimate of 2.85 we cannot be quite so confident it is twice as great." (Burrows 1998:10)

Relative risks and odds ratios are the same when the probability of a condition occurring is very low such as a particular form of cancer. With general health, where a third of the sample are social renters, odds ratios can be compared to each other but absolute sizes are less reliable.

Special attention is given to the role of tenure in predicting health. To assess the relationship between tenure and health, tenure was entered alone into a model and then significant predictors of health were added and the effect on tenure was noted.

I now present models of each health variable. All relationships discussed are significant unless I state otherwise.

General health

Respondents who assessed their health to be fair or poor were contrasted with those who assessed their health to be excellent or good. Table 7.2 shows the multivariate predictors of fair or poor health. There was very little change in the predictor variables when the extra cases were included. Age was the most important predictor of fair or poor health (table 7.3) followed by *mastery* and *self esteem*. *Income* was the next most important predictor. A*rea conditions* and *tenure* also were significant predictors of *general health*. Older and poorer respondents, those with lower mastery and self esteem, social renters and those living in worse area conditions tended to report worse general health. Surprisingly, respondents reporting more *consumer durables* tended to report worse general health. However this was after controlling for *income* suggesting that respondents who buy lots of material goods on low incomes may not be healthy. All the other predictors reduced the importance of *tenure* however they were not enough to reduce *tenure* to non significance (table 7.4). The first row in table 7.4 shows the odds of social renters being in fair or poor health compared to owner occupiers before controls. The last row shows the odds of tenure after all controls. The odds are 1.55 which is the same as the odds of tenure in the 'significant only' model shown in table 7.2. *Consumer durables* increased the significance of tenure suggesting that the extra *consumer durables* owned by owners do not enhance their health. *Prestige* from the home was not a significant predictor of health in the multivariate analysis.

Table 7.2 Variables that predict general health varying the number of cases

	All variables			Significant only		
N	1270			1578		
% correctly classified	75.75			74.14		
	OR	Wald	Sig	OR	Wald	Sig
Tenure	1.63	7.16	.0075	1.55	8.00	.0047
Age	1.02	28.71	.0000	1.03	51.33	.0000
Mastery	.89	15.85	.0001	.90	18.46	.0000
Self esteem	.93	13.58	.0002	94	17.45	.0000
Income	.97	1.25	.0014	.97	16.04	.0001
Consumer durables	1.15	6.75	.0094	1.10	4.27	.0388
Area conditions	1.04	6.07	.0138	1.05	15.54	.0001
Constant		2.34	.1263		2.23	.1366

Table 7.3 Variables predicting general health in order of significance

N=1578	Wald	Sig
Age	51.33	.0000
Mastery	18.46	.0000
Self esteem	17.45	.0000
Income	16.04	.0001
Area conditions	15.54	.0001
Tenure	8.00	.0047
Consumer durables	4.27	.0388

Table 7.4 Changes in the relationship between tenure and general health controlling for significant variables

N=1578	Tenure OR	Sig	Tenure OR change
Tenure	3.01	.0000	
Age	2.80	.0000	.21
Mastery	2.41	.0000	.39
Self esteem	2.30	.0000	.11
Income	1.64	.0006	.66
Area conditions	1.42	.0179	.22
Consumer durables	1.55	.0047	-.13

Long standing illness (LSI)

Age, *self esteem* and *income* were the only significant predictors of *LSI* once the extra cases were added to the model (table 7.5). In the first model having more *rooms* was associated with more *LSI.* The tenure effect could be explained by owners being younger, having higher self esteem and higher incomes (table 7.7). *Prestige* was not an independent predictor of *LSI.*

Table 7.5 Variables that predict long standing illness varying the number of cases

	All variables			Significant only		
N	1241			1750		
% correctly classified	70.43			69.71		
	OR	Wald	Sig	OR	Wald	Sig
Age	1.05	11.47	.0000	1.05	175.59	.0000
Self esteem	.95	13.94	.0002	.96	16.68	.0000
Income	.98	1.93	.0009	.98	11.63	.0006
Number of rooms	1.09	4.20	.0405			ns
Constant		3.64	.0563		3.80	.0512

Table 7.6 Variables predicting long standing illness in order of significance

N=1750	Wald	Sig
Age	175.59	.0000
Self esteem	16.68	.0000
Income	11.63	.0006

Table 7.7 Changes in the relationship between tenure and long standing illness controlling for significant variables

N=1678	Tenure OR	Sig	Tenure OR change
Tenure	1.71	.0000	
Age	1.44	.0017	.27
Self esteem	1.31	.0222	.13
Income	1.09	.5233	.22

Limiting long standing illness (LLSI)

The analysis of *LLSI* was very similar to *LSI.* In the analysis with all variables included, being older, having low *self esteem* and *income* and having more *consumer durables* predicted *LLSI* (similar to number of rooms with *LSI*) (table 7.8). However *consumer durables* did not predict health after adding in the extra cases with missing data on non significant variables. *Tenure* was not an independent predictor. Social renters being older, having low incomes and having low self esteem could explain the tenure difference in *LLSI* (table 7.10).

Table 7.8 Variables that predict limiting long standing illness varying the number of cases

	All variables			Significant only		
N	1237			1721		
% correctly classified	79.30			76.70		
	OR	Wald	Sig	OR	Wald	Sig
Age	1.05	88.71		1.05	131.81	.0000
Self esteem	.93	22.05		.93	31.64	.0000
Income	.97	11.76		.97	16.88	.0000
Consumer durables	1.12	4.02				Ns
Constant		2.79			.55	.4601

Table 7.9 Variables predicting limiting long standing illness in order of significance

N=1721	Wald	Sig
Age	131.81	.0000
Self esteem	31.64	.0000
Income	16.88	.0000

Table 7.10 Changes in the relationship between tenure and limiting long standing illness controlling for significant variables

N=1651	Tenure OR	Sig	Tenure OR change
Tenure	1.87	.0000	
Age	1.53	.0009	.34
Self esteem	1.35	.0218	.18
Income	1.04	.7836	.31

Number of long standing illnesses (number of LSI)

Age, *self esteem* and *income* were again the main significant predictors of *number of LSI* (table 7.11). Again the tenure difference could be explained by these three variables (table 7.12). Once more, *prestige* was not an independent predictor. With all three long standing illness variables the most important variables for changing the relationship between *tenure* and health were *age* followed by *income.*

Table 7.11 Variables that predict number of long standing illnesses varying the number of cases

	All variables			Significant only		
N	1234			1728		
Adj R^2	.141			.160		
	B	Eta^2	sig	B	Eta^2	sig
Intercept	.34	.005	.011	.36	.006	.002
Age	.1	.117	.000	.02	.132	.000
Self esteem	-.1	.010	.000	-.01	.011	.000
Income	-.1	.007	.003	-.01	.007	.000

Table 7.12 Changes in the relationship between tenure and number of long standing illnesses controlling for significant variables

N=1657	Tenure B	Eta^2	sig	Tenure B change
Tenure	-.19	.017	.000	
Age	-.12	.007	.000	.07
Self esteem	-.09	.004	.009	.03
Income	-.04	.001	.307	.05

GP consultations

Women reported more GP consultations than men (table 7.13). Older and poorer respondents, those with lower *self esteem* and those living in poorer *area conditions* tended to report more GP consultations. In the model with fewer cases, *consumer durables* and *dwelling values* were also associated with GP consultations but not in the larger model. All the variables in the larger model reduced the strength of the relationship between *tenure* and GP consultations to non significance (table 7.15). The variable that made the largest difference was *income.*

Table 7.13 Variables that predict GP consultations varying the number of cases

	All variables			Significant only		
N	1271			1674		
Adj R^2	.097			.121		
	B	Eta^2	Sig.	B	Eta^2	Sig.
Intercept	1.17	.012	.000	1.62	.025	.000
Age	.01	.025	.000	.01	.028	.000
Sex						
female	.37	.035	.000	.41	.041	.000
male	.00	.	.	.00	.	.
Self esteem	-.02	.008	.001	-.03	.015	.000
Income	-.01	.004	.033	-.01	.010	.000
Consumer durables	.06	.007	.003			Ns
Dwelling value	.00	.004	.027			ns
Area conditions	.01	.004	.029	.01	.005	.006

Table 7.14 Variables predicting GP consultations in order of significance

N=1652	Eta^2	Sig.
Sex	.041	.000
Age	.025	.000
Self esteem	.015	.000
Income	.010	.000
Area conditions	.005	.006

Table 7.15 Changes in the relationship between tenure and GP consultations controlling for significant variables

	Tenure B	Eta^2	Sig.	Tenure B change
Tenure	-.36	.025	.000	
Sex	-.32	.021	.000	.04
Age	-.27	.015	.000	.05
Self esteem	-.21	.009	.000	.06
Income	-.10	.002	.115	.11
Area conditions	-.07	.001	.313	.03

Symptoms

Many more variables were important in predicting the number of *symptoms* although not all of them were in the expected direction (table 7.16). The most important variables were *mastery* and *self esteem* followed by *sex*. Women reported more *symptoms* than men. Respondents who had lower *mastery* and *self esteem,* together with those living in worse *dwelling conditions* and *area conditions* tended to report more *symptoms*. Respondents living in low value dwellings tended to report more *symptoms* than those in high value dwellings but respondents with more *consumer durables* tended to report more *symptoms* than those with fewer consumer durables. Respondents reporting more *symptoms* tended to receive less *protection* from the

home but more *autonomy* from the home (after controlling for mastery and protection) than others. Respondents with more *rooms* reported more *symptoms* in the first model but not in the second model.

Although tenure was not a significant predictor in the first model it was significant when extra cases were added (table 7.18). The increased power of the second model, due to more cases, could explain why the tenure difference reached significance. The strength of the relationship between social renting and more symptoms was lessened by *mastery* and *self esteem*, *sex*, *area conditions*, *dwelling conditions* and *dwelling value*. Including *consumer durables* in the model slightly strengthened the relationship between tenure and symptoms and *protection* and *autonomy* made no difference. The most important variables appeared to be *mastery* and *area conditions*.

Why should more *autonomy* from the home be related to more symptoms? Further analysis (not shown) revealed that when *autonomy* is removed from the model *protection* becomes non significant and when *protection* is removed from the model *autonomy* becomes non significant. The significance of *autonomy* and protection appears to be due to the relationship between the two variables. After the amount of autonomy needed to feel protected in the home, more *autonomy* is related to more *symptoms*. This could be related to Antonovsky's theory of the problems of too much control or freedom (see section 3.1). It is perhaps more likely to be a statistical artefact because the two variables are highly correlated.

Table 7.16 Variables that predict symptoms varying the number of cases

	All variables			Significant only		
N	1244			1747		
Adj R^2	.207			.194		
	B	Eta^2	Sig.	B	Eta^2	Sig.
Intercept	3.45	.094	.000	3.40	.093	.000
Sex						
female	.17	.014	.000	.20	.018	.000
male	.00	.	.	.00	.	.
Mastery	-.04	.022	.000	-.05	.026	.000
Self esteem	-.03	.026	.000	-.03	.023	.000
Dwelling conditions	1.25	.004	.019	1.32	.005	.003
Consumer durables	.05	.007	.003	.05	.007	.001
Dwelling value	.-00	.010	.000	-.00	.003	.016
Number of rooms	.04	.003	.040			ns
Area conditions	.02	.011	.000	.02	.011	.000
Protection	-.16	.004	.024	-.14	.003	.016
Autonomy	.17	.004	.022	.15	.004	.012

Table 7.17 Variables predicting symptoms in order of significance

N=1747	Eta^2	Sig.
Mastery	.026	.000
Self esteem	.023	.000
Sex	.018	.000
Area conditions	.011	.000
Consumer durables	.007	.001
Dwelling conditions	.005	.003
Autonomy	.004	.012
Dwelling value	.003	.016
Protection	.003	.016

Table 7.18 Changes in the relationship between tenure and symptoms controlling for significant variables

N= 1702	Tenure B	Eta^2	Sig.	Tenure B change
Tenure	-.32	.032	.000	
Mastery	-.22	.017	.000	.10
Self esteem	-.20	.014	.000	.02
Sex	-.19	.013	.000	.01
Area conditions	-.12	.005	.005	.07
Consumer durables	-.16	.007	.000	-.04
Dwelling conditions	-.14	.006	.002	.02
Autonomy	-.14	.006	.002	.00
Dwelling value	-.11	.003	.023	.03
Protection	-.11	.003	.019	.00

Anxiety

Respondents who were more anxious tended to have lower *self esteem* and *mastery*, as well as worse *dwelling conditions* and *area conditions*. Younger respondents

tended to be more anxious than older respondents. Respondents with more *consumer durables* were more likely to have higher *anxiety* than those with fewer consumer durables. Likewise respondents who reported their homes were worth more than those nearby tended to be more anxious than those who reported their homes were worth the same or less. This may be because they were worried about jealousy of their neighbours and crime when they had more to protect. Some of the *consumer durables* were related to crime (burglar alarms and security lighting); it maybe that anxious people are more likely to worry about theft and so buy items to protect them (table 7.19).

Tenure was not a significant predictor of *anxiety* (table 7.21) in multivariate analysis. Psychological characteristics, *sex*, *area conditions* and *dwelling conditions* reduce the effect of *tenure*. The main reason why social renters are more anxious than owners appears to be their lower *self esteem*. *Age*, *dwelling comparison* and *consumer durables* increase the strength of the relationship between *anxiety* and *tenure*. This may be because anxious respondents are younger, live in more expensive dwellings and have more consumer durables. Social renters tend to be older and live in less expensive dwellings and have fewer consumer durables.

Table 7.19 Variables that predict anxiety varying the number of cases

	All variables			Significant only		
N	1220			1787		
Adj R^2	.377			.369		
	B	Eta^2	Sig.	B	Eta^2	Sig.
Intercept	27.79	.299	.000	28.21	.308	.000
Age	-.03	.019	.000	-.03	.022	.000
Sex						
female	.89	.022	.000	.91	.022	.000
male	.00	.	.	.00	.	.
Mastery	-.25	.041	.000	-.28	.050	.000
Self esteem	-.28	.114	.000	-.27	.105	.000
Comparison		.008	.010		.004	.010
worth more	.97	.004	.020	.92	.004	.006
worth same	.34	.001	.356	.31	.001	.278
worth less	.00	.	.	.00	.	.
Dwelling conditions	5.22	.005	.018	5.55	.005	.003
Consumer durables	.13	.003	.042	.14	.004	.010
Area conditions	.07	.010	.001	.05	.006	.001

Table 7.20 Variables predicting anxiety in order of significance

N=1787	Eta^2	Sig.
Self esteem	.105	.000
Mastery	.050	.000
Age	.022	.000
Sex	.022	.000
Area conditions	.006	.001
Dwelling conditions	.005	.003
Comparison	.004	.010
Consumer durables	.004	.010

Table 7.21 Changes in the relationship between tenure and anxiety controlling for significant variables

N=1741	Tenure B	Eta^2	Sig.	Tenure B change
Tenure	-1.04	.016	.000	
Self esteem	-.30	.002	.072	.74
Mastery	-.18	.001	.275	.12
Age	-.30	.002	.072	-.12
Sex	-.25	.001	.121	.05
Area conditions	-.02	.000	.929	.23
Dwelling conditions	.06	.000	.718	.08
Comparison	-.03	.000	.848	-.09
Consumer durables	-.13	.000	.476	-.10

Depression

Self esteem and *mastery* again were the strongest predictors of *depression* (table 7.22). Respondents with more severe *depression* tended to have lower *self esteem* and *mastery* and less *protection* from the home. Older respondents were more likely to be depressed than younger respondents. Two variables to do with people predicted *depression*: couples living with others tended to be more depressed than other *household types*. Respondents exchanging favours with fewer neighbours tended to report more *depression*. Social renters were significantly more likely to be depressed. Although all the variables reduced the effect of *tenure* except *household type*, *tenure* remained strongly significant (table 7.24).

Now that I have constructed models of all the health variables I turn to models of psychological characteristics. I summarise the results of the multivariate analysis of the health and psychological variables together in section 7.4.

Table 7.22 Variables that predict depression varying the number of cases

	All variables			Significant only		
N	1218			1787		
Adj R^2	.384			.392		
	B	Eta^2	Sig.	B	Eta^2	Sig.
Intercept	22.15	.504	.000	22.77	.512	.000
Tenure						
owners	-.56	.009	.001	-.70	.014	.000
renters	.00	.	.	.00	.	.
Age	.02	.019	.000	.03	.024	.000
Household type		.010	.006		.009	.001
lives alone	-.36	.003	.081	-.53	.005	.004
single + others	-.66	.007	.004	-.49	.004	.008
couple alone	-.51	.006	.007	-.57	.007	.001
couple + others	.00	.	.	.00	.	.
Mastery	-.17	.028	.000	-.18	.031	.000
Self esteem	-.25	.122	.000	-.26	.130	.000
Neighbourly favours	-.25	.006	.006	-.28	.008	.000
Protection	-.42	.019	.000	-.36	.012	.000

Table 7.23 Variables predicting depression in order of significance

N=1787	Eta^2	Sig.
Self esteem	.130	.000
Mastery	.031	.000
Age	.024	.000
Tenure	.014	.000
Protection	.012	.000
Household type	.009	.001
Neighbourly favours	.008	.000

Table 7.24 Changes in the relationship between tenure and depression controlling for significant variables

N=1787	Tenure B	Eta^2	Sig.	Tenure B change
Tenure	-1.58	.051	.000	
Self esteem	-.92	.025	.000	0.66
Mastery	-.80	.020	.000	0.12
Age	-.73	.017	.000	0.07
Protection	-.67	.014	.000	0.06
Household type	-.74	.015	.000	-0.07
Neighbourly favours	-.70	.014	.000	0.04

7.3 What predicts psychological characteristics?

Psychological characteristics appeared to be very important predictors of health in section 7.2. How does a person achieve health-giving high self esteem or mastery? In the following analyses, self esteem and mastery are used as dependent variables rather than independent variables (or predictors). In these models the B values are

reversed as the models in section 7.2 were predicting negative illnesses, whereas these models are predicting positive psychological characteristics.

Self esteem

Respondents with higher *self esteem*, in the model with more cases, tended to report more *mastery*, and *prestige* from the home (table 7.25). Men tended to have higher *self esteem* than women. Respondents in *social classes* I or II tended to have higher *self esteem* than those in IV or V. In the model with fewer cases *household type*, *dwelling type* and *years occupied the property* were also weak predictors. *Tenure* was not an independent predictor of *self esteem*. All variables in the model reduced the effect of *tenure* (table 7.27).

Table 7.25 Variables that predict self esteem varying the number of cases

	All variables			Significant only		
N	1273			1900		
Adj R^2	.471			.437		
	B	Eta^2	Sig.	B	Eta^2	Sig.
Intercept	14.57	.201	.000	14.90	.241	.000
Sex						
female	-.75	.010	.000	-.79	.010	.000
male	.00	.	.	.00	.	.
Household type		.008	.014			NS
lives alone	-.83	.006	.005			
single + others	-.47	.002	.147			
couple alone	.01	.000	.968			
couple + others	0	.	.			
Mastery	.82	.317	.000	.80	.299	.000
Social class		.010	.004		.006	.013
I&II	.81	.006	.008	.66	.004	.005
IIIN	.21	.000	.493	.23	.001	.326
IIIM	-.15	.000	.672	.02	.000	.939
IV&V	.00	.	.	.00	.	.
Dwelling type		.008	.015			NS
detached	-.93	.005	.011			
semi/ terraced	-.24	.001	.351			
sandstone tenement flat	-.86	.005	.016			
other flat	.00	.	.			
Years lived in home	.18	.006	.008			NS
Home prestige	1.36	.078	.000	1.24	.074	.000

Table 7.26 Variables predicting self esteem in order of significance

N=1900	Eta^2	Sig.
Mastery	.299	.000
Home prestige	.074	.000
Sex	.010	.000
Social class	.006	.013

Table 7.27 Changes in the relationship between tenure and self esteem controlling for significant variables

N=1818	Tenure B	Eta^2	Sig.	Tenure B change
Tenure	1.75	.026	.000	
Mastery	.64	.005	.002	1.11
Home prestige	.16	.000	.414	.48
Sex	.12	.000	.537	.04
Social class	-.08	.000	.717	.20

Mastery

Respondents with higher *mastery*, in the model with more cases, tended to report higher *self esteem*, and *autonomy* from the home (table 7.28). Younger people tended to have higher *mastery* than older people. Respondents with good *dwelling conditions*, *area conditions* and higher *incomes* tended to report more *mastery*. *Tenure* was not a significant predictor of *mastery* in multivariate analysis (table 7.30). Social renters have lower *mastery* than owners mainly because they have lower *self esteem*, they live in dwellings in worse condition, in areas with more problems and have lower incomes. Social renters being older and having less autonomy in their homes made smaller differences.

Table 7.28 Variables that predict mastery varying the number of cases

	All variables			Significant only		
N	1273			1585		
Adj R^2	.444			.431		
	B	Eta^2	Sig.	B	Eta^2	Sig.
Intercept	8.74	.058	.000	8.78	.059	.000
Age	-.03	.026	.000	-.02	.022	.000
Self esteem	.37	.315	.000	.36	.302	.000
Income	.02	.004	.019	.01	.003	.025
Dwelling conditions	-3.98	.004	.019	-4.58	.006	.003
Area conditions	-.04	.004	.019	-.04	.005	.003
Home autonomy	.35	.014	.000	.35	.013	.000

Table 7.29 Variables predicting mastery in order of significance

N=1585	Eta^2	Sig.
Self esteem	.302	.000
Age	.022	.000
Home autonomy	.013	.000
Dwelling conditions	.006	.003
Area conditions	.005	.003
Income	.003	.025

Table 7.30 Changes in the relationship between tenure and mastery controlling for significant variables

N=1521	Tenure B	Eta^2	Sig.	Tenure B change
Tenure	1.19	.029	.000	
Self esteem	.47	.007	.001	.72
Age	.38	.005	.008	.09
Home autonomy	.30	.003	.033	.08
Dwelling conditions	.07	.000	.633	.23
Area conditions	-.05	.000	.153	.12
Income	-.26	.002	.125	.21

7.4 Summary of the multivariate analyses

In this section I summarise the multivariate analysis presented in sections 6.5, 7.2 and 7.3. I begin by comparing the independent predictors of each health measure. I then consider the independent predictors of psychological characteristics and ontological security. At this point I review which of these independent predictors made a difference to the relationship between tenure and health, tenure and psychological characteristics and tenure and ontological security. I summarise the findings in diagrammatic form. Finally I draw attention to some of the problems with the data and the analysis.

Table 7.31 provides a summary of all the results for the health variables. *Self esteem* is the only variable that predicts all the health variables. *Age*, *income*, *area conditions* and *mastery* also predict at least half the health variables. Women were more likely to report more *GP visits*, *symptoms* and *anxiety*. Respondents with more *consumer durables* were more likely to be in fair or poor health, have more *symptoms* and higher *anxiety*. Social renters were more likely to be in fair or poor health, have more *symptoms* and be more depressed. Inhabitants of poor condition dwellings were likely to report more *symptoms* and *anxiety*. Respondents who did not feel *protected* in their homes tended to report more *depression* and *symptoms*.

Autonomy from the home, *dwelling values*, *comparison of dwellings*, *number of neighbours exchanging small favours* and *household type* each predicted one health variable. *Household type*, *comparison of dwellings* and *autonomy* predicted health in the opposite direction to that which was expected.

Surprisingly few variables were significantly related to the majority of health variables in the multivariate analysis. However *self esteem* was related to all health variables and *mastery* was related to half the health variables independently of *self esteem.* Table 7.32 shows the predictors of *self esteem* and *mastery*. *Prestige*, *sex* and *social class* could affect health through enhancing *self esteem*. *Age*, *income*, *dwelling conditions* and *area conditions* and *autonomy* from the home could affect health through increasing feelings of *mastery*.

The remainder of table 7.33 shows the ontological security factors. It may be the case that there was not a strong relationship between the factors and health because many respondents who reported higher ontological security were more likely to be ill for other reasons. For example they were women, had low income and/or were in low social classes. However respondents living in detached houses and with good area amenities reported higher ontological security scores but dwelling type and area amenities were not significantly related to better health in multivariate analysis. It is possible that they were linked to health through enhancing ontological security.

Box 7.1 Key to tables 7.31 and 7.32

couple+	couple and others,
renter	social renter,
italics	tenure only significant when sample extended;
underlined	variable exerts effect in opposite direction to that which is expected;
---	variable not entered into analysis

Table 7.31 Summary of multivariate analysis predicting health

Predictors	Dependent variable where high values negative Fair or poor	LSI	LLSI	Number LSI	GP visits	Symptoms	Anxiety	Depression
Tenure	Renter					*Renter*		Renter
Age	Older	Older	Older	Older	Older		Young	Older
Sex					Female	Female	Female	
Household type								Couple+
Mastery	Low					Low	Low	Low
Self esteem	Low	Low	Low	Low	Low	Low	low	Low
Income	Low	Low	Low	Low	Low			
Class								
Dwelling conditions						Poor	Poor	
Dwelling type								
Garden								
Consumer durables	More					More	More	
Dwelling value						Low		
Number of rooms								
Comparison with nearby homes							More	
Number of years lived in home								
Neighbours exchange favours								Few
Area conditions	Poor				Poor	Poor	Poor	
Area amenities								
Protection	---	---	---	---	---	Low		Low
Autonomy	---	---	---	---	---	High	---	---
Prestige			---		---			

Table 7.32 Summary of multivariate analysis predicting ontological security and psychological characteristics

	Dependent variable where high values positive				
Predictors	Self esteem	Mastery	Protection	Autonomy	Prestige
Tenure					
Age		Young			
Sex	Male		Female	Female	
Household type			Alone	Alone	Alone
Mastery	High	---	High	High	High
Self esteem	---	High	High	High	High
Income		High			Low
Class	I&II		IV &V	IV&V	IV&V
Dwelling conditions		Good	Good	Good	Good
Dwelling type			Detached	Detached	Detached
Garden					
Consumer durables					More
Dwelling value					High
Number of rooms					
Comparison with nearby homes					More
Number of years lived in home					Few
Neighbours exchange favours			More		More
Area conditions		Good	Good	Good	Good
Area amenities			Good		Good
Protection	---	---	---	---	---
Autonomy	---	High	---	---	---
Prestige	High		---	---	---

Table 7.33 shows which variables made an important reduction in the relationship between tenure and each health variable. I have only included variables that changed the B value or odds by .05 units to prevent chance associations being overemphasised. The most important reasons why tenure affects health are age (*LSI*, *LLSI* and *number of LSI*), *income* (*general health* and *GP consultations*) and *psychological characteristics* (*symptoms*, *anxiety* and *depression*). These results suggest that social renters mainly report more illness than owners due to personal characteristics. However housing related variables; *area conditions*, *dwelling conditions* and *protection*; also contributed to the relationship between tenure and health.

Variables that made a similar reduction in the relationship between tenure and ontological security and psychological characteristics are shown in table 7.34. Social renters being in worse condition housing was the most important reason for the relationship between the ontological security factors and *tenure*. *Self esteem* also explained part of the relationship between the ontological security factors and tenure. Additionally *dwelling value* and *household type* explained the relationship between *prestige* and *tenure*.

Mastery and *self esteem*, not surprisingly, are the most important reasons why social renters report less *self esteem* and *mastery* respectively. Social renters also report less *self esteem* because they are generally in lower *social classes* and feel their homes provide them with less *prestige*. Social renters also report less *mastery* because they tend to be older, poorer, live in houses in poor condition, live in areas in poor condition and have less autonomy over their homes.

Table 7.33 Variables that explain tenure's association with health >.05 difference in B (continuous variables) or odds (dichotomised variables)

Characteristic	Fair or poor general health	LSI	LLSI	Number LSI	GP consultations	symptoms	anxiety	Depression
Demographic	Age	**Age**	**Age**	**Age**	Age		Sex	age
Psychology	Mastery Self esteem	Self esteem	Self esteem		Self esteem	**Mastery**	**Self esteem** Mastery	**Self esteem** Mastery
Economic	**Income***	Income	Income	Income	**Income**			
Dwelling							Dwelling conditions	
Dwelling status								
Housing time								
Area	Area conditions					Area conditions	Area conditions	
Ontological security								Protection
Tenure still significant	Yes	No	No	No	No	*Yes-enlarged*	No	Yes

* Bold font indicates variable that made the largest difference

Table 7.34 Variables that explain tenure's association with ontological security and psychological characteristics >.05 difference in B values

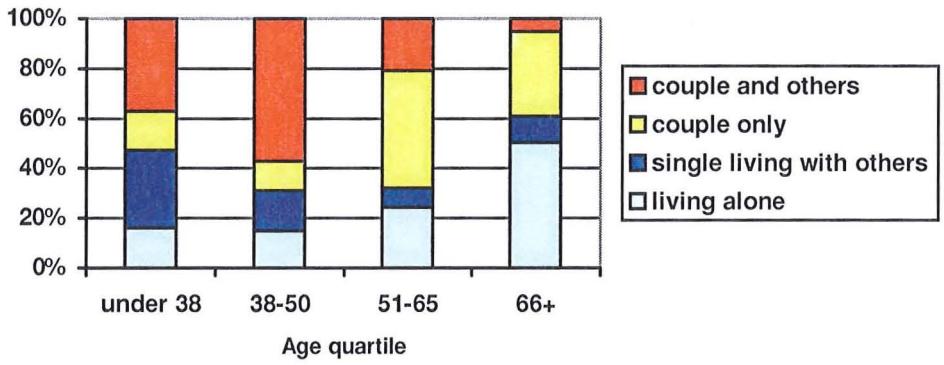
Characteristic	Protection	Autonomy	Prestige	Self esteem	Mastery
Demographic			Household type		Age
Psychology	Self esteem	Self esteem	Self esteem	**(Mastery)**	**(Self esteem)**
Economic				Social class	Income
Dwelling	**Dwelling conditions***	**Dwelling conditions**	**Dwelling conditions**		**Dwelling conditions**
Dwelling status			Dwelling value		
Housing time					
Area					Area conditions
Ontological security				**Prestige**	Autonomy
Tenure still significant	No	No	No	No	No

* Bold font indicates variable that made the largest difference

I now summarise the relationships between tenure and health (figure 7.1) suggested by this analysis of multivariate predictors of ontological security from the home, multivariate predictors of psychological characteristics and multivariate predictors of health. I would like to stress that the figure should be taken only as an informal summary as it is not possible to establish causal relationships in cross sectional analysis. I have included arrows in the model on the basis of background knowledge about the concepts and in accordance with my theory of why ontological security may be part of the pathway between housing tenure and health. There are six groups of variables in the figure. On the left hand side are precursors of being in a particular tenure (grey background). Tenure itself has a white background. Various housing circumstances arise from being in a particular tenure (pale yellow background). These circumstances give rise to varying quantities of the three elements of ontological security from the home (bright yellow background). Psychological characteristics (pale orange background) arise from housing circumstances and ontological security from the home and are direct predictors of health (dark orange background). I now discuss the relationships between these groups (tenure precursors, tenure, housing circumstances, ontological security from the home, psychological characteristics and health) in more detail.

Respondents choose or are allocated to their tenure on the basis of their *income* and their *household type*. Household type perhaps is connected to tenure through its relationship with age (see graph 7.1): single people living with others (who report least ontological security) are younger whereas respondents who live just with a partner or alone (who report higher ontological security) tend to be older.

Graph 7.1 Distribution of household type by age group



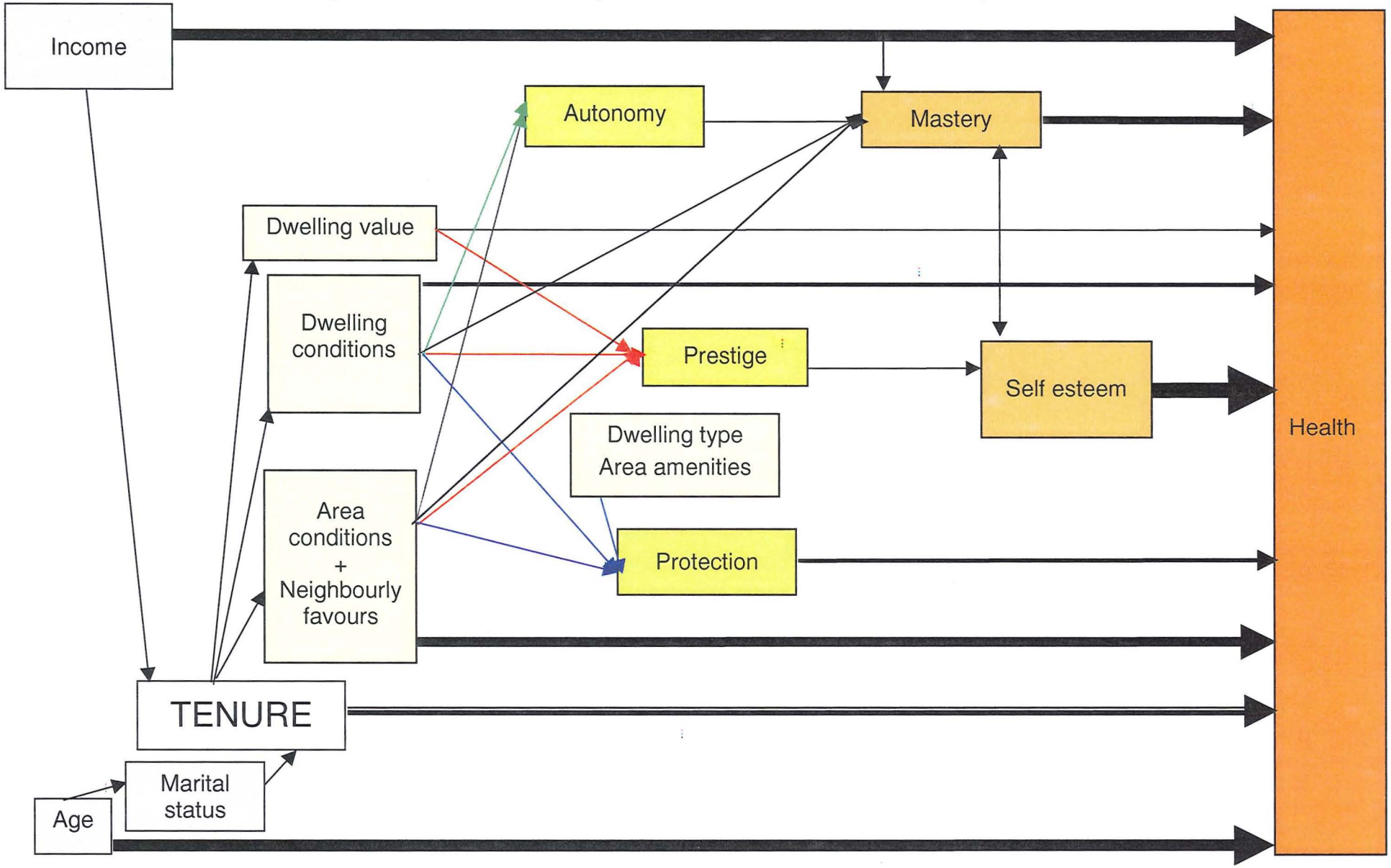
Owner occupation is likely to provide a home in better condition in a better area and that is of higher value. *Dwelling conditions* and *area conditions* relate directly to health but also relate to the three ontological security factors, *protection*, *autonomy* and *prestige*. The value of the dwelling is also related to *prestige*. Feelings of *protection* and *prestige* are also drawn from better *area amenities* and the *dwelling type*. *Protection* has a direct effect on *depression*. *Autonomy* relates to *mastery* and *prestige* relates to *self esteem*. These psychological characteristics are strongly related to health.

However it is not necessary for owners to have more *protection*, *autonomy* and *prestige* than social renters for ownership to be related to superior health. *Age* and *income* are independently related to health. *Dwelling conditions* and *area conditions* directly relate to health and they relate to *mastery* which independently predicts health. One of the aims of this study (section 3.5) was to compare housing tenure with other concepts as a predictor of ontological security. The results suggest that other variables, especially *housing conditions*, appear to mediate the relationship between housing tenure and ontological security rather than ontological security directly arising from housing tenure. Another aim was to compare ontological security with other concepts as to their likelihood of explaining the housing tenure and health relationship. Other variables are stronger candidates for being part of the pathway between housing tenure and health than ontological security. In figure7.1 I have suggested some aspects, such as *housing conditions* and *self esteem,* mediate the relationship between housing tenure and health – that is they arise due to one's

housing tenure and they affect health. Other aspects, such as *income* and *household type,* moderate the relationship, as they are precursors both to tenure and health. This analysis has not discounted the hypothesis, however that ontological security from the home may be a mediator.

Figure 7.1 is a simplified account of the analysis because I have not included the variables where the associations were reversed such as between *consumer durables* and health and *income* and *prestige*. The thickness of the lines connecting variables to health relates to how many health variables the variable significantly predicted. *Tenure* has different lines because tenure only predicted symptoms after extra cases were added to the model and it is possible that another variable, which was not tested, could be a better predictor. This is something I discuss further in the next section of this chapter where I consider possible problems and caveats pertaining to the results.

Figure 7.1: Explanations for the relationship between tenure and health from the analysis



Issues

In this section I discuss possible problems with the validity and generalisability of the results such as the cross sectional nature of the study, self report and interrelatedness of variables.

It is assumed that these demographic, psychological and housing characteristics cause health as opposed to health causing these characteristics. Of course in a cross sectional study the direction of the relationship is impossible to ascertain and it is possible that depression causes people to report less self esteem and less protection from the home for example. Additionally longitudinal studies (for example Marsh et al 2000) have suggested that childhood housing may be as important as current housing. This study did not take housing history into account, as it was not the main focus.

Another problem is that all the variables are self reported. It is possible that respondents who report worse health, worse housing conditions, low self esteem and mastery and low ontological security do so because of general feelings of negativity rather than because there is a true health difference. The only way of addressing this would be to collect objective observer assessed health measures and surveyors to measure dwelling conditions, which was outwith the limits of this study. Hope can be gleaned by noting that different housing variables were associated with different health outcomes. Prestige from the home was related to a theoretically related concept, self esteem; similarly autonomy was related to mastery. This differentiation suggests that the negative affect was not all pervasive. Additionally the inclusion of psychological characteristics in all the models means that the results for the other variables are controlling for how one feels about oneself in general.

A further problem with multivariate analysis is that many variables were highly related so one variable would be rejected from the analysis because it was related to another variable. For example income did not significantly predict self esteem but a similar variable, social class, did. I suggest that the variable that is kept in the model (social class) provides additional explanation to the model than the rejected variable (income) even though social class would be partly explained by the rejected variable.

Thus professional and managerial workers may have higher self esteem than semi or unskilled workers partly because of higher incomes but perhaps also because of the status that their job provides them. For three health indicators tenure was still significant which it could be said was not surprising because major correlates of tenure such as dwelling conditions and income were not in these models. I would suggest however that tenure would not be explained by these variables because there must be something extra about tenure which allowed it to be a significant predictor whereas the other variables were not.

In the cases of general health, depression and symptoms the relationship with tenure was not fully explained by the other variables. Tenure may be related to health perhaps due to the equity that is accumulated through owning the home or the ability to be mobile, both topics which were not covered by the questionnaire. To check whether tenure really did have something left over to explain I decided to take a different approach to the analysis. I entered all the variables into the analysis whether or not they themselves were significant. For both general health and depression, tenure did then become non significant (tables 7.35 and 7.36). This suggests that the other variables in the analysis were important in explaining the relationship between tenure and health but they themselves did not exert a strong enough effect to become significant.

Table 7.35 Changes in the relationship between fair or poor general health and tenure when other variables are added (logistic regression analysis)

N=1270	Tenure OR	Wald	Sig	% classified correctly	-2ll[1]	Tenure change	-2ll change
No variables					1480		
Tenure only	2.86	58.26	.0000	73.07	1422		-57
Demographic	2.58	39.52	.0000	73.46	1381	.28	-41
Psychological	2.19	24.87	.0000	76.54	1295	.39	-86
Economic	1.58	6.42	.0113	76.85	1277	.61	-17
Dwelling condition	1.50	4.60	.0319	77.01	1276	.08	-1
Dwelling style	1.57	5.39	.0204	77.01	1272	-.07	-4
Dwelling status	1.45	3.34	.0675	76.61	1261	.12	-11
Dwelling time	1.45	3.26	.0711	76.54	1261	.00	0
Area	1.39	2.55	.1100	76.54	1257	.06	-4
Home prestige	1.40	2.69	.1013	76.46	1256	-.01	-1

[1] -2 log likelihood – a measure of how well the model fits the data. A lower –2ll indicates a better fit

Table 7.36 Changes in the relationship between depression and tenure when other variables are added (GLM analysis)

N=1218	B	Eta^2	Sig	Adj. R^2	Eta^2 Change	Adj. R^2 Change
Tenure only	-1.38	.037	.000	.037		.037
Demographic	-1.24	.027	.000	.053	.010	.016
Psychological	-.66	.011	.000	.368	.016	.315
Economic	-.52	.006	.009	.369	.005	.001
Dwelling condition	-.42	.003	.045	.371	.003	.002
Dwelling style	-.44	.004	.040	.369	-.001	-.002
Dwelling status	-.47	.004	.037	.370	.000	.001
Dwelling time	-.45	.003	.042	.370	.001	.000
Area	-.41	.003	.064	.375	.000	.005
Prestige & protection	-.38	.003	.083	.384	.000	.009

With fewer cases in the model predicting symptoms, tenure was not significant but became significant when extra cases were added. Changes in the significance of tenure with the number of cases in the analysis exposes a problem with the data being used for this analysis. About half the original sample completed the questionnaire but about half of these were eliminated from the analysis due to missing questions or misunderstanding questions. This hampers finding definitive answers to the research questions.

Even though tenure was fully explained in some of the models it is possible that for some groups within the population there would still be a tenure difference. As interactions were not tested this issue cannot be commented on. The results apply to the general population overall.

Conclusion

In the Transport, Housing and Wellbeing postal survey data, it appears that tenure is related to health because of the different age, sex and income groups within different tenures (Explanation A in chapter 2 box 2.1), and the conditions of the dwellings and area (Explanation D). The psychological characteristics of the occupants (Explanation B) were not directly related to tenure: psychological characteristics were related to tenure through housing and area conditions and the occupants social class. A prestigious home and one that provides autonomy may also boost psychological characteristics (Explanation E). Protection from the home appeared to be directly related to depression. None of the explanations in box 2.1 are the sole

reason for the relationship between tenure and health instead each appears to play a part. Thus ontological security, as characterised by protection, autonomy and prestige, does not have a major part to play in the relationship between tenure and health but it does appear to make a small contribution, particularly through enhancing self esteem and mastery.

In the final chapter I make further clarification of the results by discussing ontological security from the home and the major components of the pathway between housing tenure and health in the context of the wider literature. I also provide supportive quotations from the qualitative interviews with THAW sample members.

Chapter 8 Conclusion

I begin this chapter by summarising the thesis so far. In later discussion I make some conclusions about each element that my analysis suggested should be in the pathway between housing and health and make links to other work. I then conclude by discussing the implications of the results found in this thesis.

8.1 Summary of the thesis

Housing tenure has been observed to be linked to health: owner occupiers have been found on average to be healthier and to live longer than renters, particularly social renters. In the United Kingdom this has been observed in several surveys such as the Longitudinal Study, the NCDS and the National Morbidity Survey. Similar results have been found in other countries, such as Sweden, where owner occupation is less dominant.

Researchers sometimes see tenure as a proxy for financial circumstances; thus they suggest that owner occupiers enjoy better health than social renters simply because they have higher incomes. However, there is some evidence in the literature that tenure still predicts health after controlling for income.

Other authors suggest that social landlords allocate their housing to those in poorer health, who, moreover, may find it impossible to access mortgage finance; in this case people's health determines their tenure rather than their tenure determining their health.

A further explanation for the observed health difference is the different physical characteristics of social rented and owner occupied accommodation. Damp, cold, noise, overcrowding, flatted accommodation, poor area conditions and the general state of the property have all been linked to poor health. These problems tend to be more prevalent in social rented accommodation than owner occupied accommodation.

Other researchers have argued that owner occupied homes provide psychological benefits stemming from tenure per se. One particular theory that has been discussed in the literature is that owner occupation provides more ontological security than social renting. I chose to look at ontological security for this thesis because in the past it has been explicitly theorised to be linked to housing tenure rather than just housing in general. Academics have also suggested that it might be associated with health. Housing theorists who have discussed ontological security have not previously empirically investigated or hypothesised links between ontological security and health.

Laing (1965) and Giddens (1991) have developed the concept of ontological security, suggesting it is a deep belief that the world is secure and reliable rather than threatening. The concept has elements in common with Tillich's (1952) courage to be, Erikson's (1965) basic trust, Antonovsky's (1979) sense of coherence, and Bowlby's (1988) theory of attachment. These concepts have all been linked to enhanced mental and sometimes physical health. There is no consensus (or empirical research) into how people acquire ontological security or at what stage of the lifecourse they acquire it. Suggestions include good parenting, a secure surrounding milieu where one can follow routines and one's home.

Ontological security is hard to define. For the purpose of this study I suggest the literature implies that it consists of three components: protection, autonomy and prestige. Housing can also supply protection, autonomy and prestige. It has been suggested that humans have a basic need for shelter (protection), when that need is satisfied we prefer control over our housing (autonomy) and eventually we desire our homes to be status symbols (prestigious).

Saunders (1990) and Dupuis and Thorns (1998) argued that home ownership provides ontological security more than rented housing. Owners live in better quality dwellings and have security of tenure; owners have more autonomy over who comes into their home and what they can do with their home; and thirdly owner occupied housing tends to provide greater prestige. Forrest and Murie reject this argument. They suggest that the advantages of owner occupation depend on the surrounding culture, thus it cannot be universally linked to ontological security.

They also suggest that the rapid growth of owner occupation has been due to the wealth producing advantages of owner occupation. Gurney's work suggests that the family is of overriding importance when people think of home, rather than their tenure, although he did find tenure prejudice against social renters. Nettleton and Burrows have looked at owner occupiers whose homes have been repossessed. Their research suggests that repossession can threaten ontological security. Thus it appears that ontological security may not be related to tenure itself, but to aspects linked to tenure such as family and wealth.

This thesis discusses the housing section of a postal survey of a random sample of adults in the West of Scotland in 1997 (N=2838). The postal survey included a 9 item scale devised to measure ontological security from the home through protection, autonomy and prestige, in addition to collecting data on health, demographic, psychological, economic, housing and area characteristics.

Most of the sample were either owner occupiers or social renters. Other tenure categories were too small to include in the analysis. Responses from those who were permanently sick were not included in the analysis as a way of tackling the reverse causation hypothesis. About two thirds of the remaining sample were owner occupiers and the rest were social renters. The sample included a wide variety of people in different types of housing and areas and with different characteristics.

This study had three aims (see 3.5). Have these been met? The first aim was to see whether ontological security from the home could be broken down into three component parts of protection, autonomy and prestige. The ontological security from the home scale did have a factor structure corresponding to these components. The second aim was to see how closely ontological security from the home was related to tenure. The analysis suggested that ontological security from the home is not directly related to tenure per se. Any relationship found is due to dwelling conditions, self esteem and, in the case of prestige, house value. The third aim was to see whether ontological security from the home played any role in the pathway between housing tenure and health. Ontological security from the home played only a minor role. Prestige and autonomy predicted psychological characteristics that

were strongly related to health. Protection was an independent predictor of mental health (depression). Thus the three aims of this study have been met.

Ontological security from the home appeared to play only a marginal role in explaining why homeowners are healthier than social renters. Improving the housing conditions of social renters would enhance the ontological security available from their homes and their health (partly through increased ontological security). Social renters' health could also be enhanced through dealing with neighbourhood problems successfully, increasing incomes and enhancing self esteem.

Thus housing tenure relates to health, according to the results of this study mainly because of its association with income, psychological characteristics and age; sex, housing conditions and area conditions also played a role. Components of ontological security from the home (protection, autonomy and prestige) were only of marginal value. Ontological security appeared to arise from the condition of the home, self esteem and the value of the dwelling rather than from tenure itself.

As a precursor to the discussion of these features of the pathway between housing and health, I will mention that this study has drawn attention to the difficulties of making substantive conclusions using conventional statistical methods (General Linear Models and logistic regression) and in cross sectional research. The researcher has to make many choices, such as what criteria to use to exclude variables, which are likely to have profound implications for the results. Many important concepts are highly related to one another and the results of statistical analyses may be due to small differences between respondents rather than generalisable differences. To provide support for my arguments I will therefore also draw on data from the qualitative phase of the THAW study, which has not been the focus of this thesis.

8.2 Features linking housing tenure and health

In this section I begin by evaluating the ontological security measure used in the study. I then discuss whether ontological security was important in the pathway between housing tenure and health, and then consider each ontological security factor in turn. In the remainder of this section I discuss housing related features of

the pathway (dwelling value, dwelling conditions and area conditions), psychological characteristics and demographic aspects (age, sex and income).

Ontological security

To begin with, how well did the scale measure ontological security? In the literature review three components of ontological security were identified: protection, autonomy and prestige. A three factor structure was revealed that was consistent with this theory. It is possible, however, that the autonomy factor was under expressed due to the small number of items that loaded upon it and its similarity to the protection factor. There may have been insufficient items covering other aspects of ontological security, such as the idea of permanence versus change or routine versus spontaneity/unreliability, that meant that some items stood out individually rather than being part of a factor. Despite these concerns, the ontological security factors were able to contribute to the analysis in a meaningful way. However I did not measure ontological security itself, only ontological security from the home. Thus it is not possible to say whether owners had more ontological security in general than renters.

The findings from this study are consistent with much of the previous literature on ontological security and housing tenure: researchers have started out with the proposition that there are good reasons why owners should receive more ontological security from their homes than social renters but this has not been borne out by the evidence. Rohe and Stegman (1994a) found only very minor changes in people who bought their homes and no differences in self esteem or control. McLaverty and Yip (1993) observed that many social renters who appeared to possess the means to buy their homes had not done so, implying that people were not desperate to enhance ontological security through home ownership.

In multivariate analysis, in this study, psychological characteristics of self esteem and mastery were also not related to tenure. This, together with the results found by Rohe and Stegman and McLaverty and Yip, implies that the reason for not finding an independent relationship between ontological security and tenure was not to do with the way ontological security was conceptualised in this study. Rather there may

not be a straightforward link between tenure and psychology. The link is mediated by housing and area conditions and socio-economic position.

This research is therefore further evidence that Saunders made too simplistic a picture with his contention that ontological security is derived from owner occupation. Yes it is the case that owner occupiers are likely to report more ontological security from their homes. Owners' positivity stems from their homes being in general in better condition, situated in better areas and also from characteristics of owners themselves. Owners are in general younger, they are more likely to have a partner to share life with and also they tend to earn more money. The demographic characteristics of owners and the conditions that owners live in are superior to those of social renters; for these reasons they report more ontological security from their homes. Owners' higher scores are therefore not necessarily to do with their tenure but other aspects of their lives which have implications for their housing.

The THAW study provides a useful extension to Gurney's thesis on ontological security and the meaning of home (Gurney 1995). Gurney's sample was confined to owner occupiers in a small traditionally working class area of Bristol. The THAW postal survey included a large group of social renters to contrast with an even larger group of owner occupiers in the West of Scotland which is a very heterogeneous area. Gurney's work also suggested that ontological security was not automatically conferred by owner occupation but that feelings of security were derived from the experience of home itself and particularly family.

The current study found some very interesting results on the subject of ontological security from the home and household composition. Respondents who derived most ontological security from their homes, tended to live alone or just with a partner. This draws attention to the nature of the scale that I constructed. There were no items concerning feelings of security received from other members of the household. Gurney contended that security from the family (emotional security) was the chief type of security from the home. However in this study a scale was developed that did not refer to the family at all. It could be said that this was a worrying omission. However, it enabled me to observe that those who do not associate their home with

large families, or even with any other human at all, still can gain important benefits from the home. Interestingly in multivariate analysis (after taking into account income, self esteem and age) it was respondents living with a partner and others who were most depressed. There were no other significant findings for household type.

There was also evidence from this study that the home could provide a place of refuge for other disadvantaged groups besides those living alone. Respondents in the lowest social classes and also those with the lowest incomes were more likely to score higher on elements of ontological security. The home can be a buffer against the caprices of daily life for those without good life chances. More advantaged people perhaps gained security from other areas such as work or other publicly recognised sources of achievement.

It is difficult to determine how far the security measured in this study was 'ontological' in nature; a criticism that Gurney highlighted when discussing the topic. It could certainly be said to be 'experiential' in that the scale linked experiences of one's housing to feelings of security. Notably the scale was not strongly linked to long term illness although none of the dwelling characteristics measured in this study contributed much to chronic illness (this may partly be to do with the length of time respondents had lived in their homes; nearly 10% of respondents had lived less than three years in their homes and data were not collected on the length of time respondents had been an owner or renter). Unfortunately it is impossible to address 'ontology' fully in a cross sectional study. A longitudinal study would be required to look at changes over time. One would need to be able to answer questions such as how far does the external environment affect the core of one's being. There is some evidence that insecurities in housing can be a major factor in mental health from the interview data:

> I: Do you think that where you live, and the area, has made a difference to your health and wellbeing?
> R: Yes, I think it has exacerbated my mental illness. [I was] uprooted from the house [due to compulsory purchase] and also from my friends, the loss of the local ambience, the local pub and the local shops and the places I could go for a walk, we also lost the business... the whole thing was a trauma and I think it was one of the dominoes in the domino effect, that resulted in my illness. (P8r male social renter)

There is support from the literature that moving house can be a life event that can threaten mental health. Birley and Brown (1970) interviewed 50 patients who had been recently diagnosed as schizophrenic or who had relapsed about life changes or crisis, such as moving house, in the three weeks before symptoms appeared. The patients had experienced significantly more events in this period than four previous three week periods; additionally control respondents who did not have symptoms experienced similar low numbers of life events throughout the period analysed. Moving house is also often included in life events scales that predict poor health, although it tends to be given less weighting than changes in household composition such as divorce (Homes and Masuda 1974). Nevertheless changing residence can be an important life event which may have implications for health and wellbeing.

There was a strong relationship between home-based ontological security and self esteem and mastery, two long term psychological traits. Again in a cross sectional study it is not possible to determine whether good psychological characteristics were shaping respondents' answers to the ontological security question or whether ontological security was feeding in to enhance or impair self esteem and mastery.

The evidence from this study suggests that Saunders was wrong in his belief that the owner occupied tenure, as a way of occupying property, is intrinsically associated with ontological security. Saunders implied that there was a problem with social renting in itself. This does not appear to be the case. The problems are the bad conditions of the property and also the sort of people who are likely to be one's neighbours in social rented estates. It does not seem plausible that selling 'neighbours from hell' their houses would be the solution:

> R: They're not the only family in the street that are trouble-makers... And whether you removed that family or not, there would still be trouble here.
> HUSBAND: Aye, well, but I'm talking about the council. Because the other people [who are trouble-makers] own their own houses.
> (R17 Right to Buy owner)

Indeed, the above quotation illustrates that antisocial owners can be more difficult for the authorities to deal with and thus pose a greater threat to their neighbours.

This is not to say that ontological security is not important for health. In the literature, ontological security and similar concepts such as sense of coherence were

closely linked (whether causally or because both are measuring similar things) with depression and anxiety. In this study none of the components of ontological security were related to anxiety in multivariate analysis and only the protection factor was related to depression. However in this study the concept of global ontological security was not itself studied; the scale only measured ontological security from the home. I shall now discuss each component of ontological security from the home in more detail.

If the home was not seen as a haven or a place of protection, the likelihood of being depressed increased. This study has confirmed people's need for a place to withdraw and be themselves suggested in the literature on the meaning of home (e.g. Gurney 1995; Smith 1994; Despres 1991); these other studies have not focussed on health impacts of home however.

Moves towards developing the private rented sector and other forms of insecure housing such as bed and breakfast accommodation are perhaps more likely to compromise people's feelings that where they live can be a secure haven (Gallent, Baker et al. 1998). Conway documented the problems of 57 mothers who had lived in hotels in England for four or more months. There were many safety issues (for example they were not able to keep cooking facilities out of children's way, and had to carry hot water up many flights of stairs); mothers also reported stress from not knowing when they were to be rehoused so they never felt settled. Areas with high numbers of hostels for men have high mortality rates (Brimblecombe, Dorling et al. 1999). Conway concludes "large amounts of temporary accommodation have been used for many years... the ultimate solution is obviously, for there to be more permanent housing" (Conway 1993:299). The alternatives to social housing are even less adequate from a protection viewpoint.

Housing conditions in the THAW study were closely related to feeling protected in the home. In an American study, if housing and area conditions were poor then a dwelling was less likely to be perceived as a 'home' (Horowitz and Tognoli 1982). Policies promoting the private rented sector should be thought through very carefully. In the social rented sector, area and dwelling conditions might prevent

people seeing where they live as a protective haven. In this study the sample was too small to explore the meanings of private renting in detail.

Autonomy in the home was associated with increased mastery. When respondents thought of autonomy they did not appear to be thinking about their tenure instead they were thinking about the people they shared the home with. Respondents living alone or just with a partner were perhaps more able to exert their influence over the home. Living alone was not necessarily likely to improve living conditions; for example without the incentive of other people's comments, standards may slip:

> I: Do you like living alone?
> R: Up to a point... it's not quite so disciplined as a...you know, I'd better tidy the place up before the wife comes back or she'll skin me alive if she sees this mess... when I go off to work in the morning, the bed doesn't get made till I come back at night. That's common... you've got more control over. You can get away with things that normally if you were living with somebody else you would have to be a bit more disciplined towards their feelings.
> (R16 male social renter)

In fact, respondents who had most autonomy in their homes also reported more symptoms. Antonovsky argued that total control might not be beneficial despite its attractions (Antonovsky 1979; Antonovsky 1987); learning to co-operate may bring more benefits. The literature on social capital suggests that associating with other people may provide health benefits (Kawachi and Kennedy 1999). The results of this study do not support the theory that living an increasingly autonomous life will result in better health.

Self esteem was related to all health measures and prestige from the home contributed to self esteem. Having a home that one could be proud of was important for health. However owner occupation does not necessarily guarantee that a home will be a source of pride:

> I: Are you proud of your flat?
> R: Proud of it? No. I don't have anyone - you're - it's unusual for me to allow anyone in there. Not at all. I'm ashamed of it!... No, it's just a dump 'cos I don't do anything to it! But that's my own choice.
> (J8 male owner of a tenement flat)

An owner occupied home in a bad state could be associated with shame rather than pride. As an owner, living in a poor condition home is perhaps more a reflection of oneself: there is no landlord to blame. Thus identifying more with the home,

through home ownership, might not bring more rewards if the home is in a poor condition. Although prestige itself was not related directly to tenure, house value was related. This will be the subject of the next section.

The importance of a desirable home

House values tend to rise and fall with the desirability of both the home itself and the neighbourhood in which it is situated. A high value home is likely to be seen as desirable by a larger number of people. A high value home could thus be said to provide prestige for its owners. The perceived value of the dwelling was related to housing tenure and to health. It was also strongly related to prestige from the home.

The variation in house values is likely to depend upon the surrounding culture. An unequal culture is perhaps likely to have a wider range of house values. In an unequal society the need to have a home which is seen as desirable by others may be increased (Phe and Wakely 2000). With the residualisation of the social rented sector the desirability of social rented housing can only decrease further as the desirable houses built for social renting in the mid twentieth century become owner occupied (Stubbs 1988). One in thirteen council and housing association properties in England are now difficult to let (Pawson and Kearns 1998). This may be partly due to their poor conditions and neighbourhood issues but also being a social renter is now stigmatised. The literature on social comparisons suggests that in the USA, at least, inequalities have become large enough to prejudice health (states with large differences between the richest and poorest inhabitants have higher mortality rates than more equal states) as the need for large amounts of wealth increase and the effects of low income are not offset by state provision (Wilkinson 1994).

Buying a home may be seen to increase one's standing of itself:

> R: It is just a way of upgrading myself.
> (J17 male bought home from the council)

Furthermore homeownership may also increase one's prestige as one becomes upwardly mobile and can move to nicer dwellings in better areas:

> R: People that I know that own a house they're always moving on to other houses... buy something, do it up and then they have to move on to another property to sort of get better, better, better all the time.
> (R21 male social renter)

There may be no desirable social rented properties in an area. Therefore entry into the owner occupied market provides the opportunity, with sufficient income, for a gradual improvement in status as one acquires wealth and can move into more desirable areas.

One way to combat the undesirability of the social rented sector that is currently being tried is to reduce the concentration of households in poverty. This can be done by encouraging home ownership in low income areas (which in America is reducing the availability of social rented dwellings (Salama 1999)) or by subsidising renters to buy houses in other areas; schemes include the Section 8 voucher scheme in the US and the 'Homebuy' initiative in England. These involve better off tenants leaving the worst areas thus increasing the concentration of the remaining poverty further and long term subsidisation of low income owners may be as expensive as social housing. Scotland has recently abandoned a similar scheme and is instead concentrating on improving conditions in the social rented stock.

Social rented estates are not always viewed negatively, even in America. Houses near small new build social rented estates, in Portland Oregon USA, made small gains in value when the estates opened (even after controlling for inflation). The authors suggest that introducing more people, and especially children, into residential areas could increase local services and amenities. They also note that the new social renters were not from ethnic minorities and the dwellings were mainly low rise single family residences rather than tower blocks (Rabiego, Lin et al. 1984). The data were collected between 1963 and 1978 and since then the public sector has become more residualised and thus this type of proximity may be less desirable. This older study shows how public housing does not always have to be viewed negatively. The negativity surrounding social renting has been socially constructed. Vale reports a more recent study conducted with 267 residents of 5 public housing estates in Boston USA. Two thirds of the inhabitants wished to stay on their estate. Vale suggests, "these housing developments are far less vilified by the people who reside there than they are by the middle class outsiders who regularly condemn them" (Vale 1997:173). However the estates where interviewees were most positive had been physically regenerated and the safety of the area had been improved. Physical conditions of the home and area are the next topics.

Housing conditions

Housing conditions (damp, cold, noise, overcrowding and state of repair) were related to health and to feelings of mastery in multivariate analysis in this study. Stubbs (1988) noted that her Sunderland sample had not remained loyal to a particular tenure for ideological reasons; instead they had moved between tenures in order to achieve the best housing conditions. In the qualitative data collected as part of the THAW study there were also indications that this was the case. Interviewees in their 50s who had been in bad condition owner occupied housing actually saw the better conditions of new council housing as an improvement:

> I: So did you feel differently when you moved into the council house?
> R: Well, obviously there was a bathroom and we had hot water and everything that we didnae have [in the owned house], we just had one of these wee immersers that you filled with the tap... it was an outside toilet, so obviously it was a big difference then! (R20 female social renter)

Later on when the council accommodation was in a bad state interviewees had to do repairs themselves so they felt they might as well own the house so that they could benefit from longer term repairs:

> R: All the facilities were getting faded away by the [public rented sector]. In electrical work, the likes of minor things, you were expected to do that yourselves, you couldn't just call an electrician out or a plumber out willy-nilly...
> I: Do you think you'd have done things like the kitchen... if you were still renting?
> R: No I'd never have done that. I would nae put a kitchen in for somebody else to come and live in. It would be silly and I would nae put double glazing in. (R14 male Right to Buy owner)

It appears that some people actively search for good condition housing whatever the tenure.

Although people who buy homes from social landlords may subsequently do repairs, data from the Scottish Housing Conditions Survey (1991) suggests that low income owners are less likely to do repairs than owners on higher incomes (Littlewood and Munro 1996). Thus Morris argues that encouraging the transfer of all property to owner occupation is not the answer to the problem of poor housing conditions:

> "I take little comfort from the observation made to me recently that the reduction of the publicly rented sector in percentage terms would reduce the problem. Even if it were true, which it patently is not, it would be a most negative route to a solution." (Morris 1996:17)

Therefore although housing conditions are worse in the public rented sector and these conditions have health implications, it would be wrong to infer that the easy answer is to destroy the public rented sector as some have argued and transfer everyone to home ownership (e.g. Husock 1995; Saunders 1990). The finding from this study that benefits of protection, autonomy and prestige from the home were not derived from tenure itself, but from good conditions of the home, supports this conclusion.

Area conditions

The extent to which people think about area characteristics when evaluating their homes was first drawn to my attention by the results of the pilot survey: when respondents were asked to name the best things about their home, many spontaneously mentioned area issues. Area conditions were associated with many health measures in multivariate analysis.

Upsets with those living nearby can be a source of stress and anxiety and fears of crime and vandalism compromise the security felt from the home:

> I: I'd like to ask whether you think your home has made a difference to your health and well-being?
> R: Oh, definitely, yeah. Yeah. I mean, when we were round in that other house, we had bad neighbours, and when we moved round here, that stress was taken away... They were an older couple whose daughter stayed [in the same street] and the daughter fell out with the children and things became very complicated because we shared a gate and it wasn't a nice, you know? They really pulled my health down; I mean, I almost had a nervous breakdown. (R5 female Right to Buy owner)

Perhaps unsurprisingly, given the lack of financial support provided by successive governments and growing social and area inequalities (Shaw, Dorling et al. 1999), many of the areas dominated by social rented housing are deteriorating into crime ridden zones meaning that part of the problem is that their inhabitants no longer believe in the upkeep of their local areas. This complete deterioration in standards is often perceived as a relatively new phenomenon.

> R: The folk that lived decently or wanted to live decently found these flats very difficult to keep to the standard they wanted, because there was a lot of people sharing a communal stairway who wouldn't clean it, who wouldn't take their turn at scrubbing it. And it got to the stage a lot of these people wouldn't go and live in these flats. This sort of element were the only ones that would take them on... they used the stairway as a public toilet, some of

> them, and the whole place is just dreadful... Just wasn't our scene either; because we had never ever been brought up to that sort of set-up at all. And I mean, my mother was the youngest of fourteen in her family, and none of them ever was in any bother or anything like that - it was never heard of. And it wouldn't have been looked upon - it was all frowned upon in those days particularly.
> (R7 female owner, aged in her 50s, remembering being a social renter)

Causes of antisocial behaviour include disintegration of communities, the rise of an underclass and a decline of moral values among other factors (Scott and Parkey 1998). If people do not see themselves as important they may look for alternative life goals, which are not helpful to their neighbours.

For the government to desert these areas, as a landlord, in favour of low income owner occupation and private landlords, is likely to further increase the insecurity of the inhabitants, as social landlords are tend to evict troublesome tenants whereas private landlords may choose not to evict an antisocial tenant who pays the rent! There are now many examples of areas that have been regenerated only to be abandoned by their inhabitants due to fear of crime. For example in Vale's aforementioned study of five American social rented estates, three had been regenerated and two had not. The estate where residents were least satisfied and were most likely to want to leave was one of the improved estates. Despite regeneration, on this estate there were fears for personal safety and a serious drug problem (Vale 1997). To improve these sorts of areas it may be necessary to change the security of society generally so that being at the wrong end of the income hierarchy is not such a terrible place to be. However it would be wrong to stigmatise social renting further by seeing social rented areas as equivalent to problem estates. Scott and Parkey found that only some of the Scottish social rented schemes that they studied experienced a large number of problems with antisocial behaviour.

Becker suggests that some of the problems associated with rented estates are due to the greater visibility of deviant behaviour: middle class youngsters may also engage in drug taking, playing music and hanging around. However they may do so in private cars and larger homes so their activities are less troublesome to the community (Becker 1977). Thus the nature of housing and poverty and visibility of behaviours may be implicated within area affects.

Taylor et al suggest that community issues affect health through psychological mechanisms including social impoverishment (the inverse of social capital), chronic stress and the erosion of social ties. From their review of the literature they suggest that healthy environments "provide safety and opportunities for social integration" (Taylor, Repetti et al. 1997:439). Psychological characteristics were of major importance in predicting health outcomes in my study although other features confounded links between psychological characteristics and tenure.

Psychological characteristics

In multivariate analysis there was not a direct link between tenure and mastery or self esteem. Many concepts linked to tenure (such as income, social class, housing and area conditions) are also linked to psychological characteristics. Matthews (1989) links inferior education to poor health outcomes due to psychological characteristics of those with little education. The THAW data suggests that poor housing and area conditions may be partly linked to health through the meanings that arise from them which have an effect on mastery. Likewise social class may partly be associated with health through self esteem.

Whether psychological characteristics of self esteem and mastery were causes or consequences was difficult to untangle in this study (Explanation B or E in box 2.1). In some ways psychological characteristics can be seen as predictors of tenure, as in Macintyre, Ellaway et al.'s (1998) analysis (people with high self esteem in the first place are more likely to become owners whereas those who think less well of themselves may have less courage to move into owner occupation). In the final analysis psychological characteristics were seen as an outcome due to tenure characteristics such as area and housing conditions, prestige and autonomy from the home. In a cross sectional study it is not possible to adequately sort out the direction of effects. Future longitudinal research tracing growth of self esteem through childhood and into adulthood would be needed.

Age

Age was the main reason why social renters were more likely to suffer chronic illness than owners. Social renters suffer worse health partly because they are at a different lifestage to owners. Social renters were likely to be older than owners in the sample. Much social rented housing was built in the mid twentieth century

(Harriot and Matthews 1998). Thus more social rented accommodation was available for people forming households during that period. In recent years more households have become eligible for mortgages and the social rented sector has contracted. This may help explain why younger people are more likely to be owner occupiers. Additionally older people may struggle to obtain a mortgage if they wish to transfer to owner occupation. However whether the home ownership of older people is an advantage has been questioned. It may be harder for older owners to cope with repairs (McLaverty and Yip 1993) or to escape from distressed neighbourhoods (Burkhauser, Butricia et al. 1995).

Sex

Women in the sample were more likely to be ill and to be social renters. This is not an unusual finding. In America the gender difference is more extreme: "Public housing has been transformed from the mixed gender institution envisaged by its proponents to housing occupied primarily by unmarried women" (Spain 1995:357). Reasons for the American gender difference include problems obtaining maintenance payments from absent fathers and lack of a pro family policy. In the UK women are excluded from owner occupation due to lower incomes than men; low income is sometimes related to single parenthood (Somerville 1998). Furthermore housing allocation policies in the social rented sector may exclude single mothers from the best social rented properties because their need for housing means that they are less likely to reject offers of difficult to let properties (Pawson and Kearns 1998).

Income

Income was a strong predictor of health. Income itself may underlie much of the health advantages of homeowners. High income allows one to purchase a home that provides protection, autonomy and prestige and a home that is in a good condition and in a good area. Obviously, there are also non housing related health advantages from a high income such as the ability to purchase holidays and efficient transport.

Monetary considerations may have been paramount in the decision to buy a home rather than the advantages of the owner occupied tenure per se:

> "Although it is often assumed that the growth of home ownership came about as a direct result of the desire to own, many other factors have played a part

> including rising income, the growing availability of mortgage finance, the decline of the private rented sector, the financial advantages of ownership and the policies of Labour and Conservative governments which have reshaped the structure of housing opportunities... if consumer preference for home ownership is so great today, why has it changed so rapidly and why are home ownership levels lower in some other wealthier countries."
> (Hamnett 1999:52)

Hamnett suggests that people chose to become owners because government policies make owner occupation a better option financially than renting. In Europe private renting is more popular due to different government policies. Wealth provides power in today's society so the ability to gain wealth through housing has enormous appeal.

The complicated relationships between wealth and income have yet to be disentangled (Radner 1990). I would have liked to explore wealth in addition to income in the postal survey. Unfortunately this requires very detailed questioning about a very private area and so to keep response rates reasonable this idea had to be abandoned. The wealth generating possibilities of tenure were at the forefront of many people's minds in the interviews:

> R: Who could ever afford to have seventy or eighty thousand pounds in the bank, a working man. I mean, I've got the value of this house... It's a legacy. I might not be able to give my daughters a lot of money, but I can give them the house... My mother and father died, they had nothing to leave me.
> (P1r male first generation owner, taxi driver)

The Right to Buy scheme meant that people gained even more money from discounts. However whether owner occupied properties in poor areas are likely to appreciate in value is debatable (Rosenburg 1995).

The problems of social renting can be seen as a problem of social inequalities generally. Shaw et al looked at standardised mortality ratios and also at socio-economic characteristics using the population census and school performance data, up to 1996 by parliamentary constituency. Their data shows a widening gap in health and socio-economic inequalities between 1950 and 1995. They argue that the most important way of improving health is to provide policies that increase the income levels of the worst off in the UK: "The most effective way of reducing inequalities in health in Britain is to reduce poverty. The poor have too little money" (Shaw, Dorling et al. 1999:191). They suggest a two-pronged attack on poverty.

Firstly levels of welfare benefits and pensions need to be increased and secondly standards of living need to be improved through provision of services. One of these services is social rented housing.

At the time of writing much is being made of the idea of selling off council housing to other social housing providers to improve conditions. I would argue that this is going to simply be 'rearranging deckchairs on the Titanic' unless secure funding is found for improving properties. Private investors are likely to be unwilling to pay for properties in which they can make no large profits. This has been demonstrated by Salama's (1999) detailed discussion of three public rented estates currently undergoing regeneration in the US. Private investors were only interested in the areas where land prices were high and even then they were only willing to subsidise a fifth of public rented housing . Crook and Moroney suggest that, in the UK, the reduced government grants and reliance on private investment "do not provide a framework for housing associations to deliver urban and housing renewal policy" (Crook and Moroney 1995:1709). The Titanic is perhaps a fitting metaphor in that Shaw et al's work shows that hundred of thousands will die prematurely and millions will experience ill health due to health inequalities in the first few decades of the twenty first century unless inequalities and living standards can be improved.

Low income owner occupation is insecure (Nettleton and Burrows 1998; Ford and Burrows 1999) and there are minimal safety nets in the UK (Ford and Wilcox 1998). Unfortunately it appears that there is little alternative in the social rented sector. Although social renters may gain security of tenure, which is important especially to older people (Hiscock, Kearns et al. in press), they may be living in poor housing conditions and in crime-ridden areas that they wish to leave. Despite this, council tenants have in the past voted against transferring from the council because of the importance of security of tenure (Harriot and Matthews 1998). Already rising rents in housing associations mean that virtually only those dependent on housing benefits can live there (Hamnett 1999).

For the poor there are dwindling opportunities for decent housing. In affluent rural areas of the UK the Right to Buy has been very popular. A study of 340 Right to Buy house sales in South Northamptonshire found that new owners were in higher

social classes and fewer new buyers had local roots than the former tenants who had bought their home through Right to Buy. The loss of these houses means that local youngsters will find it much harder to obtain housing (Chaney and Sherwood 2000). Work on the census suggests that the amount of stock in both the private and social rented sectors dwindled significantly in the 1980s; 94% of English local authorities had more polarised tenure distributions in 1991 than 1981; the issue of affordable housing has now become so severe in some desirable areas, such as the home counties, that there are strong calls for affordable housing to be placed on planning agendas (Gallent, Baker et al. 1998). In the recent English Rural White Paper small amounts of new build social housing are being proposed in rural areas (Department of the Environment, Transport and the Regions. 2000).

One issue that this study has not considered in detail is employment security. Insecure employment may make home ownership less possible and is itself related to ill health (Bartley, Montgomery et al. 1996; Ferrie, Shipley et al. 1998) and general confidence or ontological security:

> R: As long as you've got work I think you can cope with most things, other than severe illness right enough... My son, he had a nervous breakdown two years ago, because he wasn't working... I really think work is the most important thing for people, because at least it gives them an aim for the future and it gives them confidence and everything you know, because I feel my son has lost all his confidence, and yet he was that clever too, at school.
> (R8 female owner)

With insecure employment people may be unable to commit to long term investments in owner occupation (Berry 1999). Burrows' work on the Survey of English Housing suggests that:

> "Many of the features most closely associated with a more flexible labour market are the very factors which lead to increased odds of mortgage indebtedness: part time working; self employment; increased job insecurity; and so on" (Burrows 1998:20)

There needs to be more research on the interface between contract culture and housing opportunities. Since the Labour government came into power there has not been a recession and unemployment has fallen. The recession in the early 1990s was accompanied by increasing repossessions and arrears (Forrest and Kennett 1996). With further changes since then a future recession may have serious implications for employment with repercussions for home ownership.

8.3 What are the implications of this study?

This study has implications for both the housing literature and policy. Wells argues:

> "To tease apart the influence of improved physical housing quality and the effects of owning one's own home would be a valuable and timely contribution to housing literature... To understand the potentially interactive effects of these factors would better equip us to set appropriate and effective housing policy" (Wells 2000:19)

The aim of this study has been to tease apart the meaning of tenure. The results suggest that tenure as a legal way of holding property had little consequences for health. The meanings of tenure itself are overshadowed by other factors.

Today we are living in a divided society in terms of income, dwelling conditions and area conditions. Being a social renter is a consequence of having low income and a cause of living in poor dwelling conditions and in areas with low reputation. These have implications for health. Increasing social renters' incomes, improving their housing conditions and area conditions are the main ways in which their health can be enhanced. However area conditions can only be improved if the people living in these areas can feel secure enough about their lives that they decide to respect other people's property. Providing meaning to people's lives through work may be important. However low paid insecure monotonous work with no prospects may not be a solution. In America arguments have been made that social renters "may resort to criminal activity that may be more lucrative than the entry-level jobs available with limited work experience" (Salama 1999:105). Providing meaningful lives is likely to be helpful, perhaps increasing the social capital in poor neighbourhoods may be a way forward. These improvements are likely to enhance people's ontological security, which is likely to also translate into health benefits.

Currently the concept of 'social capital' is very much in vogue. The relationship between ontological security and social capital is likely to be reciprocal. One may need a certain amount of ontological security to be able to reach out to others, but in turn ties with other people, according to Bowlby's work on attachment (Bowlby 1988), are likely to bolster ontological security. A dwelling to which one is not ashamed to bring people may help social ties develop but this study has suggested that rewards from the home can be greatest when it is a private place with fewer

other household members. The connection between ontological security arising from the environment and from relationships with other people needs to be explored further.

This study has drawn attention to the role of individual psychology in the pathway between the environment (housing) and health. This has placed the respondents thoughts firmly at the centre of the topic rather than seeing respondents just as passive receptors of environmental influences and being in a particular demographic category. Taylor et al note that "not all individuals in the same environment are affected by that environment in the same way, nor will all individuals in a given environment sustain health risks." (Taylor, Repetti et al. 1997:413). This suggests there is a role for psychological factors. The concept of ontological security, although still imperfectly measured in this study, did appear to be a link between the environment and health although in this study it was seen as arising from the environment rather than the individual.

The permanence, continuity and reliability aspect of ontological security was not well captured by the scale. Had there been more time between the pilot survey and the main survey it would perhaps have been advantageous to have included more items on the subject of ontological security from the home and then developed the scale by choosing those items that performed best in the pilot survey. This would have meant separating the meaning of home scale from the meaning of transport scale which would have been helpful to this thesis as I am here just concentrating on housing rather than looking at features that span the housing and transport domains.

Items on permanence that could have featured in the scale include "Home is somewhere I belong", "I want to move home" and "I feel settled in my home". Additionally there were not many items that loaded on each factor. Further items that could have been included describing protection are "I feel scared in my home" and "I worry about being burgled". Further items describing autonomy could be "My home reflects my personality" and "My home is decorated to my tastes". Prestige could have been reflected in the items "I feel proud of my home" and "I feel ashamed of my home". More of these items are negative which would have helped

the scale to be more balanced and reduced the chances that respondents developed a response set when answering the questions.

There are some recommendations arising from this study for future work. Firstly for studying pathways and patterns of causation longitudinal research is really necessary. Secondly a low response rate and much missing data hampered finding unambiguous results. If the scale had been part of a door to door interviewer survey then perhaps this problem would have been lessened. Additionally physical measures of health and housing conditions could have been collected which would have increased the validity of the results. Face to face contact could have been useful increasing the response from those with literacy problems. If there had been interviewers we could have used the Postcode Address File rather than the Electoral Register as an individual sampling frame. If the Postcode Address File had been used then private renters may have been numerous enough to be analysed. Further work is needed to study ontological security in this housing tenure.

In this thesis I have concentrated on ontological security in terms of housing rather than as a concept in general. If space in the survey had not been taken up by transport I would also have had room for developing a general ontological security scale. Further research would be necessary to compare a general concept of ontological security with other psychological concepts such as self esteem and mastery and also to explore the properties of ontological security such as mutability and its possible role as a buffer against challenges to health.

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Appendix 1 Sampling

In this appendix I explain why the sampling frame and sampling strategy undertaken were chosen, by discussing the advantages and disadvantages of CACI Ltd's Scottish*ACORN (which entailed using an enhanced electoral register as the individual sampling frame) compared to the alternatives. I then provide information about the representativeness of the sample using Scottish*ACORN.

I begin by discussing my review of area and individual sampling frames. This section firstly describes why particular forms of area classification were rejected. Secondly it discusses reasons for choosing the individual sampling frame.

Nine area classifications were considered. These included deprivation indices derived from census measures, non census sources of area data and geodemographic classifications. The criteria for taking a classification into consideration were development for use in Scotland, the source of information being no earlier than the 1991 census and availability at small area level. The usual small area level used in Scottish classifications is postcode sectors (e.g. G12 8) which cover, on average, about 9000 addresses. Scottish*ACORN is provided for postcode units (e.g. G12 8RZ) which include about 15 addresses in urban areas, more in rural. Using higher aggregated areas, such as postcode districts (e.g. G12) increases the possibility of over-generalising the underlying pattern. Using smaller areas may increase the chance of anomalous results due to individual cases; the best way to overcome this is to use a variety of indicators.

Two deprivation indices were considered: the Carstairs Index (Carstairs and Morris 1991), updated by McLoone (1994) and the Scottish Office Index (Duguid 1995). A deprivation index can be defined simply as "a score composed of a number of social variables from the census." (Carstairs 1995:S4). An issue with deprivation indices is that they simply provide a number for each area whereas geodemographical classifications provide a more detailed description (Openshaw and Blake 1995b).

The two deprivation indices reviewed also used fewer variables than the geodemographic classifications. The variables were from the 1991 census. As the study was to be undertaken at the end of 1997 it was thought that the use of more variables would be preferred as out of date variables would have less overall effect. For the same reason the use of single census variables (i.e. housing tenure), as a classification, was rejected besides deprivation indexes.

Because of the time lapse between the census and the study, non census sources of area data were also considered, such as council tax benefit data, car license data and lifestyle market research data. Council tax benefit data was rejected primarily due to problems of incompatibility of various councils' data and because the data is not collected for research purposes which leads to errors and missing data (Jones 1995). Lifestyle market research data is based on samples which tend to be biased through the type of person willing to fill in such a questionnaire. The gaps are then filled with census data. The DVLA have recently begun contracting out the information about car licenses. Although it was likely that the data would be ready to use at the right time, rare makes of cars were not going to be included at a small area level (I. Henderson, personal communication, 3rd March 1997) which could bias the results. Post census measures of housing tenure were also considered but again they were not available at low level resolutions. I therefore decided, as did Coombes, Raybould et al. (1995), that the disadvantages of non census data outweighed the advantages. Recently non census area deprivation classifications have been developed but these were not available in 1997 (DETR 2000; Kearns, Gibb et al. 2000).

A geodemographic classification can be defined as:

> "A means by which people can be characterised by the types of area in which they live using postcodes as a simple indexing mechanism to a multivariate classification of small area census data" (Openshaw and Blake 1995b: S34).

Three geodemographic classifications were reviewed: an academic index, Openshaw and Blake's GB profiler (Openshaw and Blake 1995a; Openshaw and Blake 1995c); the ONS (Office of National Statistics) classification of Wards (ONS 1996) and ACORN (A Classification Of Residential Neighbourhoods) provided by CACI Ltd, a commercial company (CACI 1994; CACI 1997).

The GBProfiler was rejected because it was not certain that the form useful for sampling frames would be available in time. The ONS classification of wards classified postcode sectors in Scotland into 14 groups. The ONS classification and Scottish*ACORN are similar in that the manufacturers (ONS and CACI Ltd.) both have substantial experience and expertise in the field (Denham 1993; Openshaw and Blake 1995a). However Scottish*ACORN was preferred because it was devised specifically for Scotland which increases the chances of classifying Glasgow and Clyde Valley in a meaningful way. Over 100 census variables were used including home ownership, car ownership, age, health, employment and occupation as well as questions only asked in Scotland such as floor level of residence (CACI 2001).

The other reasons for choosing ACORN were the advantages of working with CACI Ltd. Firstly CACI could also produce the most attractive sampling frame of individuals. This was our conclusion after conducting a review of sampling frames. Three important criteria for a good sampling frame of individuals are firstly that the sampling frame contains as many as possible of the people who reside in the area and that those who are not in the sampling frame are not homogenous in a way that will effect the study, but secondly that the sampling frame would also contain as few as possible of people or addresses that are irrelevant, for example business addresses, or people who have died (collectively known as deadwood). Thirdly the information provided should be likely to make the response rate as high as possible. Three individual sampling frames were reviewed. These were the electoral register (ER), the postcode address file (PAF) and the community health index (CHI). The definitions of each one is given in box A1.1.

Box A1.1 Definitions of the three individual sampling frames considered

ER	"A list of all people eligible to vote in the United Kingdom... For each person the ER includes their name address and in the case of those who will become 18 during the life of the register, date of birth" (Lynn and Lievesley 1991:9)
PAF	"The postcode address file is a computerised list of every "delivery point" in the United Kingdom to which the Post Office delivers mail" Small users file 50 or less items on average a day "PAF contains the full postal address, including post code" (Lynn and Lievesley 1991:12) (a minority of rural addresses have names rather than a house or street name)
CHI	People who are registered with General Practitioners.

I rejected the CHI because there are suggestions that 10% of persons are missed (Carstairs and Morris 1991) compared to 4% for the ER and 1% for PAF (Lynn and Lievesley 1991)). Furthermore there may be particular problems in urban areas such as Aberdeen (Garton, Abdulla et al. 1996) and in the Glasgow area. Williamson, Martin et al. (1997) found that 201 out of 450 subjects randomly selected from the CHI in the Greater Glasgow Health Board area, were no longer resident at the address and could not be traced.

The people missing from the PAF and ER are different groups. Recent movers and thus private renters are underrepresented in the ER (Arber 1993). Insufficient representation of private renters could be a problem for a study on housing tenure. Self employed people who receive too much post to be included in the small user file[1] are those most likely to be missing on the PAF. These are not a group that has particular resonance for the present study. On the point of coverage the PAF appears to be the best sampling frame.

When considering ineligible addresses the PAF does have disadvantages:

[1] The small user file comprises of all addresses that receive on average under 25 items of mail per day. This incorporates most residential addresses and so is generally used as a sampling frame for individuals

> "The proportion of addresses which turn out to be ineligible is higher on PAF (11-12%) than on the ER (2-4%). Furthermore the geographical distribution of ineligible addresses is more uneven on PAF than ER... For example on a 1989 SCPR survey which used a GB PAF, sample analysis showed that in the 416 postcode districts that contained between 10 and 240 sampled addresses... the proportion of the addresses that were ineligible varied from 0% to 100% with 31% of districts containing 5% or fewer ineligibles but 5% containing at least 30% ineligibles." (Lynn and Lievesley 1991:29)

Additionally the Disability and Employment survey revealed that the Glasgow postal area has the highest rate of deadwood in the UK (16.3%) after inner London (Lynn and Lievesley 1991). If the PAF is used as a sampling frame in the Glasgow postal area, a much larger sample must be drawn so that the dead wood can be mitigated. Thus on the second criteria of deadwood the ER may be superior to the PAF.

Although Lynn and Taylor (1995) found that the difference in response rates between the ER and PAF was not significant, their surveys used interviews rather than a postal questionnaire. The Electoral Register provides a name for a postal questionnaire whereas the PAF does not. Without names a questionnaire can only be addressed, impersonally, to 'The Occupier'. This increases the risk of the questionnaire being thrown away as junk mail. Again, on the criteria of response rates, the ER may have advantages over the PAF.

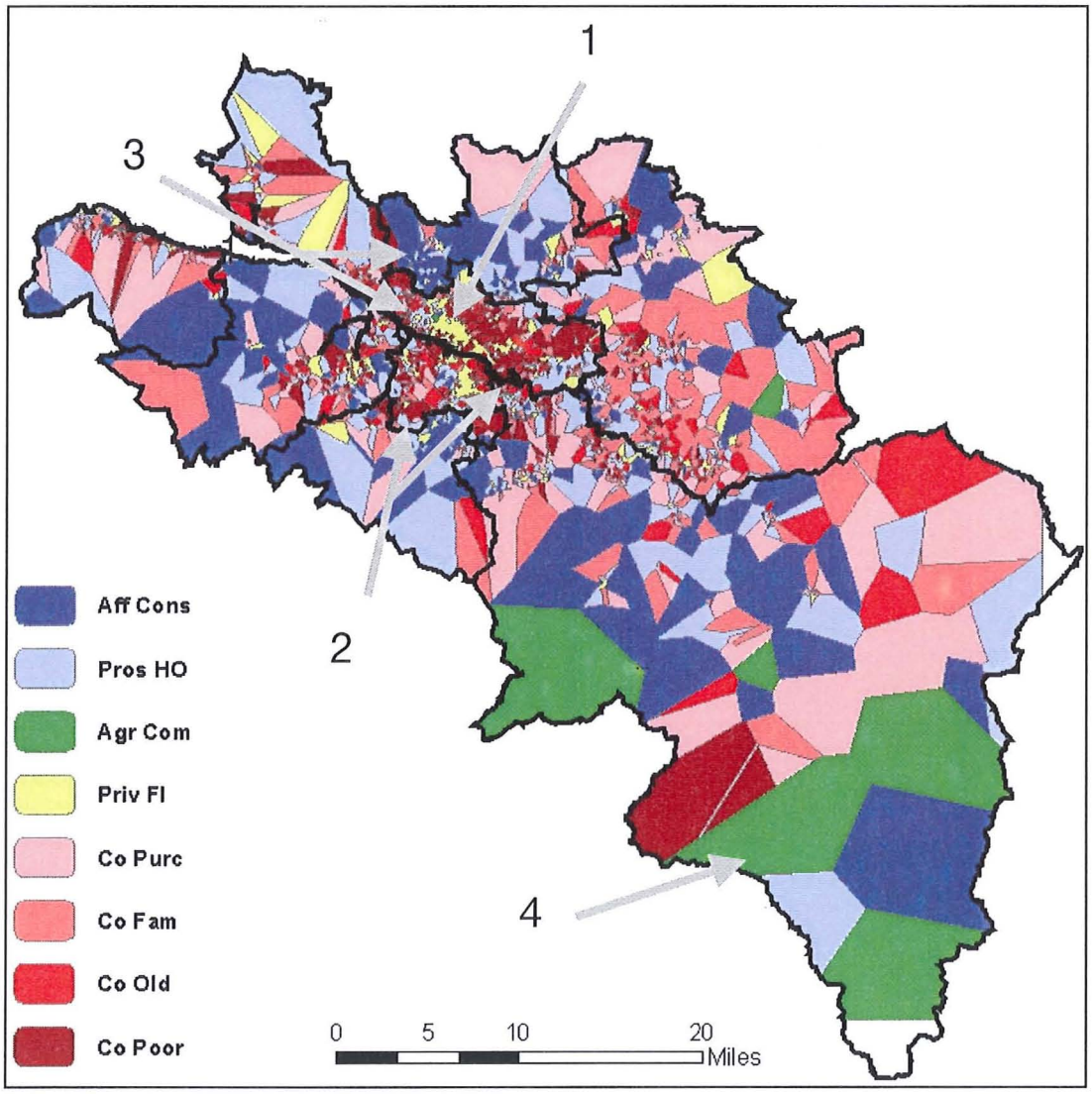
On two out of three criteria the ER fares better than the PAF. However the problems with coverage are particularly important as the private renting tenure would be likely to be under represented. One way to overcome this would be to sample more people from areas with more private renters. I decided against this because firstly the sample would then not be representative of Glasgow and Clyde Valley and secondly even in areas in which they are most numerous, private renters tend not to be the majority tenure so boosting the sample in such areas would not guarantee a substantial increase in private renters. However the best area classification was Scottish*ACORN provided by CACI Ltd. CACI provide the sample themselves from an enhanced electoral register. This enhanced register is updated quarterly thus more movers are included. In this way it is possible that more private renters would be included.

In summary the best area classification appeared to be Scottish*ACORN provided by CACI Ltd and the optimum individual sampling frame appeared to be the enhanced electoral register also provided by CACI Ltd.

One issue with commissioning a commercial company to provide the sample is that CACI Ltd are less open, than for example ONS, about providing information on how the classification is calculated. This would have been a greater cause for concern if ACORN had been an important explanatory variable in the analysis rather than simply a way of stratifying the sample. One way to check whether the classification seems reasonable is to geographically map the Scottish*ACORN codes of sample members (figure A1.1). Scottish*ACORN is provided at unit postcode level and would breach confidentiality if mapped. Since I only have Scottish*ACORN classifications for postcode units with a sample member (a limited subset of the total neighbourhoods) a method of interpolating between the available unit postcodes was necessary. A Thiessen polygon has therefore been constructed for each sample member.

All locations within a Thiessen polygon lie closer to the sample member used to define that polygon than to any other sample member. Thiessen polygons are particularly useful in creating artificial polygons when true boundaries are not available (Gatrell 1991) as is the case here. Neighbouring polygons with the same Scottish*ACORN code were then merged. Using this method, Scottish*ACORN assignment to geographical areas has been more accurately defined for areas with high populations (where more sample members live such as Glasgow City) than rural areas. Thus the large areas mapped as council estates in rural South Lanarkshire (see figure A1.1) reflect the composition of small towns and villages where the sample members lived rather than the empty surrounding countryside.

Figure A1.1 Map of Scottish*ACORN in Glasgow and Clyde Valley based on the Thiessen Polygons[1] estimated from the THAW sample.



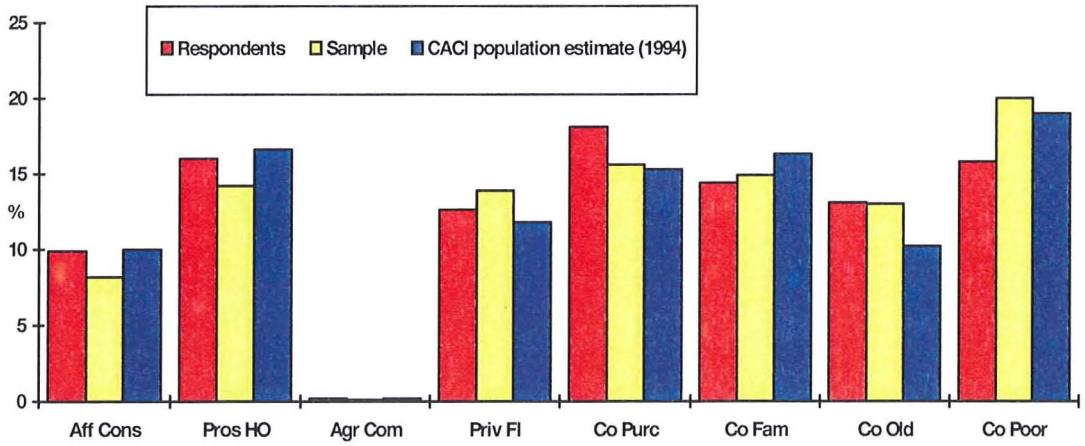
The map does provide a familiar picture of deprivation in the West of Scotland. Areas classified as 'private tenements and flats' surrounded Glasgow University as expected (1). The location of many of the poorest council estates was north eastern, eastern, and south western Glasgow in areas such as Possil, Easterhouse and Pollok (2) and prosperous house owning areas were found around Bearsden and Dowanhill (3) again as is the case. Areas classified as agricultural communities were mainly found in rural South Lanarkshire (4). One possible source of concern was that a unit postcode adjacent to the Botanical Gardens in Glasgow was also classified as agricultural communities. Nevertheless overall, it appears that Scottish*ACORN is

[1] I would like to acknowledge the help of Clive Sabel in the construction of this map

a sensible classification of areas and reinforces our choice of Scottish*ACORN over the alternatives

Was the sample representative? I compared the distributions of the Scottish*ACORN codes of the 2687 respondents with those of the 6500 people in the sample and also with the 1994 population estimates of Glasgow and Clyde Valley from CACI Ltd (Graph. A1.1). For each group (the respondents, sample and the population) the percentages sum to 100%. Thus 10% of the population live in areas classified as affluent consumers. In the sample drawn by CACI 8.2% were from such areas and 9.9% of the respondents were from such areas. For all Scottish*ACORN groups there is little difference between the proportion in the population, the proportion in the sample and the proportion of respondents from that Scottish*ACORN group. The largest difference was for the poorest council estates. Only 15.8% of respondents compared with 20% of the sample and 19% of the population were from these areas. This is not surprising, given that literacy is likely to be lower in such areas. However even in the poorest council estates the difference between the respondents and the sample was less than 5%. It appears that the respondents and the sample were representative of the population in Glasgow and Clyde Valley.

Graph A1.1 Representativeness of the Scottish*ACORN groups among THAW respondents and sample compared to the population of Glasgow and Clyde Valley



I also checked whether the respondents were spatially representative throughout Glasgow and Clyde valley (table A1.1) by comparing valid respondents with other sample members (non respondents, and movers outside Glasgow and Clyde Valley). There were fewer respondents from Glasgow city than other areas. This may be partly explained by the high proportion of poorest council estates in Glasgow city or high mobility within the area. Respondents from Glasgow city had moved significantly more recently than those in other areas. Nevertheless about a third of the sample were from Glasgow city.

Table A1.1 Response rate from Unitary Authorities within Glasgow and Clyde Valley

	Valid respondent		Other sample member		Total	
	N	%	N	%	N	%
West Dunbartonshire	134	4.7%	175	4.8%	309	4.8%
East Dunbartonshire	165	5.8%	172	4.7%	337	5.2%
North Lanarkshire	524	18.5%	616	16.9%	1140	17.6%
South Lanarkshire	522	18.5%	554	15.2%	1076	16.6%
East Renfrewshire	119	4.2%	131	3.6%	250	3.9%
Renfrewshire	276	9.8%	335	9.2%	611	9.4%
Inverclyde	141	5.0%	162	4.4%	303	4.7%
Glasgow City	948	33.5%	1508	41.3%	2456	37.9%
	2829	100.0%	3653	100.0%	6482	100.0%

In this Appendix I have explained in more detail why I chose Scottish*ACORN above other geodemographic classifications, deprivation indices and non census classifications. Major reasons for choosing Scottish*ACORN were the use of a large number of census variables and its specificity to Scotland. Using Scottish*ACORN entailed that the names of sample members would be selected from an enhanced electoral register which fortunately is probably the optimum individual sampling frame. I also provide an evaluation of whether Scottish*ACORN appeared to classify areas as one would expect and of whether the sample drawn and the respondents were fairly representative of Glasgow and Clyde Valley.

Appendix 2 The qualitative sample and the topic guide

In this appendix I provide more detail about how the qualitative sample were selected and the characteristics of the sample. I also discuss how the interview was conducted and provide the topic guide.

The qualitative part of the study was designed by the project's grant holders: Sally Macintyre, Ade Kearns and Anne Ellaway and myself. Jo Dean, who conducted approximately half the interviews, also had some input. We used a quota sample to achieve equal numbers of interviewees from social renting and owner occupying households, and from car owning and non car owning households. Table A2.1 shows the tenure, car access, area and gender distributions of the interviewees. We aimed to achieve a spread of wealth among the interviewees so we selected equal numbers of owners from the postal survey who said they had bought their home from a social landlord and owners who had bought on the open market. We differentiated social renters by whether they obtained half or more of their income from welfare benefits. In each tenure and car access group we selected at least one representative from each gender and from inside and outside Glasgow City.

While finalising the schedule, 3 pilot interviews were conducted (with two social renters and one owner). These interviewees provided much useful information and the information gained did not differ significantly from other interviews so they were included in the analysis.

Table A2.1 Tenure, car access, gender and area breakdown of the interviewees

Tenure	Open market owner		Right-to-buy owner		Renter little or no state benefits		Renter many state benefits	
Car in household	Car	None	Car	None	Car	None	Car	None
MALE								
Glasgow	*1(+1)*[a]	2	1	2		2	3	*3(+2)*
Elsewhere	2	1	1	1	1	2	1	
FEMALE								
Glasgow		1	2		1			
Elsewhere	2	1	1	2	3	1	1	2
TOTAL	***5(+1)***	**5**	**5**	**5**	**5**	**5**	**5**	***5 (+2)***

[a] Numbers in italics represent pilot interviews

We chose only to interview respondents under 65 as older people may have age specific tenure issues, such as moving to sheltered housing, which could lead an interview off topic. Ten of the 43 interviewees were in the survey's youngest age quartile (under 38), 14 were in the younger middle aged quartile (38-50) and 19 were in the older middle aged quartile (51-65). Most were ethnically Scottish. One interviewee was black. About half lived with family members, about a quarter lived just with a partner, a further quarter lived alone and two lived with a friend. All but three of the interviewees were householders or partners of householders (rather than being children or parents of householders) so they were potentially active decision makers about their homes. Twenty three interviewees were working and three were at college. Sixteen interviewees lived in houses, ten lived in four in a block flats (a two storey dwelling which is purpose built as two flats downstairs and two flats upstairs) and the rest lived in other types of flats. Three lived in small villages, eight lived in large villages or small towns, six lived in medium or large towns, five lived in suburbs of Glasgow and the remainder lived in Glasgow City.

The majority of interviews took place in interviewees' homes. Three took place in the interviewers' workplace and three in another place familiar to the interviewee (a

relative's house, their work, at college). Interviews were carried out between February and May 1999. Interviews lasted between half an hour and three hours.

The interviews were in depth using an interview guide (see below) rather than a fixed schedule of questions. The interviewers were able to depart from the guide and did not have to discuss topics in a particular order. There were three main sections on housing, transport and health and wellbeing. In the housing section interviewees were shown two cards with pictures of housing and asked to discuss them. The pictures on each card are described in Table A2.2.

Table A2.2 Description of pictures of housing shown to interviewees

Sheet 1	Sheet 2
1. four in a block houses	5. large detached house in its own grounds
2. boarded up low rise block	6. tower block with other tower blocks and waste ground
3. renovated low rise block	7. medium modern detached house
4. sandstone tenement	

In summary, the interviews were conducted with a wide variety of survey respondents living in a variety of situations. The interviews covered transport as well as housing and health issues.

Transport Housing and Wellbeing

Qualitative Study

Discussion Guide

MRC 6 Lilybank Gardens Glasgow G12 8RZ

This questionnaire has three sections covering where you live, how you get to places and your health and wellbeing. We will start by thinking about housing.

Tenure

Places people stay

What do you think of when you see this house?

- What sort of people live there?
- Which is most like your house?
- Where would you like to live?

General feelings about your home

1. How did you come to be staying in this house?

- Who made the decision for you to live here?
- Was it a good choice?
- Would you like to move?

1. Is it a good house/flat to live in? what you like

- Likes/dislikes
- type of building
- type of environment

b) Are you proud of it? How and why?

- Is it important to have a home you can be proud of? Why?

c) What you spend time doing in the home, in the local area?

- Friends, social activities: in home or elsewhere?
- People in your household, how you feel about sharing the home with others/ living alone: (prompt privacy, loneliness)
- Who makes the decisions about what happens, are you happy about this?

d) How do you feel about working on the house:

- Do you think keeping the home nice is important why?
- Do you do very much, do you like making plans,
- Is there any thing preventing you making the house as you wish (prompts money, landlord, damp, other people etc.),

e) How affordable is it?

- Mortgage, heating, repair costs

f) Does it provide security?

- How would you define security e.g. safe, financially? How and why?
- How important is it for you to feel secure?

3. What would make your home a perfect home?

4. Do you see where you live as home or just a building?

- What makes your home a home or not?

5. Who owns your home-

- do you see it as yours or belonging to building society/landlord?
- do you feel differently about it now you have finished paying the mortgage?

6. We have talked about benefits and problems of your home. Would it make a difference if your home was (privately) rented / owned?

- Would owning / private renting / renting from the council suit you better than your current situation

We are now going on to talk a bit more about the differences between owning and renting

7 a) Why do you own/rent now?

b) Have you ever been an owner / (private) renter in the past-

- what was better/worse about that?

c) Do you ever see yourself becoming an owner/, (private) renter- Why?

d) Have you had any particular problems with owning or renting
(if not previously covered)

- Hassle with landlord/building society/ obtaining a mortgage /waiting lists/ trying to move?
- Ever been repossessed/ evicted or known anybody who had?- Are you worried now?

8a) Do you know people who are owners / (private) renters,

- why do you think they are owners / (private) renters?

b) What is the balance of people owning & renting in your local area?

- Is it about right?
- Tenure balance in general

c) If not covered: Which is your opinion of owning & renting in general?

- Do you think that there will be more owners or renters in the future, why?
- Is this good?

d) If applicable: Do you think owning is better than renting because owners tend to live in nicer areas?

9 As our final question in this section I would like to ask whether you think that your home has made a difference to your health and wellbeing?

- prompt area / home

Car access

How you travel

10. What are the main ways that you get to places (on foot, car, bus, train)?

- Do you use different ways depending on where you are going?
- Is … a good or bad way to travel? Why?
- Is the way you get about now the way you prefer to travel? Why?

We are now going to discuss some of the problems and advantages of travelling that people mentioned in the questionnaire and your experiences

11a) Do you think feeling safe is important when you travel?

- What makes you feel safe or unsafe when you travel?
- Do you feel safe when you travel
- out of the ways that you travel which feels safest?

b) In our questionnaire we asked about whether people had privacy when we travelled. What does privacy mean to you?

- Out of the ways that you travel which feels the most private?
- does the way you travel provide privacy?
- Is it important to have privacy when travelling and why?.

c) How important do you think it is to be comfortable when going to places?

- Which way of getting to places that you use is the most comfortable and why?
- do you feel comfortable when travelling?

d) Do you like to feel in control when you travel or are you not bothered?

- Do you feel in control when you travel?
- when do you feel most and least in control?

e) Is the way you travel convenient? How?

- Which of the ways you get about are more convenient and why?
- ask about responsibilities with cars e.g. Repairs etc.

f) Is the way you travel expensive?
- (which way is most expensive)?
- How important is expense to you?

g) Are there any other benefits that you can think of that we haven't covered?

12) A lot of car adverts suggest that the way you travel says something about you as a person. Do you agree with this?

13) Would you say that some ways of travelling are more stylish than others? Why?

14) What would you say says more about you: the way you get about or where you live? Why?

15) Do you think it would be better or worse if everyone owned a car?
- quality of life
- green issues

16) What do you feel about taking or giving lifts?

We are now going to talk some more about your feelings and experiences about cars

17) Can you drive?
- Why did you decide to learn to drive?
- why you have never done so?
- Would you like to learn to drive?

18 If you have a car

a) Why did you decide to buy a car?

b) Do you share a car with anyone else?
- Who has priority over the car?
- who drives? how you feel about that?
- Would you like another car?

c) Are you thinking of buying a new car why, why not?
- prompt finances.

d) Do you get attached to the cars you drive or do you see them as just an object?

e) What difference would not having a car make?
- Could you manage without a car?

f) From your own experience would you say having a car has been good or bad for your health and wellbeing or has it made no difference?
- Would other forms of transport be better or worse for your health?

19 If you do not have a car

a) Why do you not have access to a car at the moment
- (if applicable) Would you like a car why/ why not?
- If yes what sort of car would you like? Why?

a) What difference would having a car make to your life?

c) Would having a car improve your health and wellbeing or would it make things worse or would it make no difference? Why?
- Are other forms of transport be better or worse for your health?

General questions about your health and life

20 Do you think you are fairly healthy or unhealthy now?

- Why do you describe your self as in good, fair or poor health.

a) The government tries to promote good health. What do you think they mean by good health?

b) What would you say makes a difference to your overall health and wellbeing?

- Prompts: work, money health behaviour, family and friends
- Would you say where you live makes a difference?
- Would you say being an owner rather than a renter makes a difference?
- Would you say having a car makes a difference?

21 If you are feeling under the weather/ a bit down what do you do to make you feel better?

- Prompt for physical/mental

22 Which face best describes how you feel your life is going in general?

- What would make you say a happier/sadder face?
- How much do housing and transport affect the face you chose?
- What other things are important or more important?

23 What are your main worries at the moment?

24 What things keep you cheerful/ cheer you up?

25 Anything else you would like to mention

Appendix 3 The Transport, Housing and Wellbeing postal questionnaire

UNIVERSITY
of
GLASGOW

Transport, Housing And Wellbeing

Questionnaire

This questionnaire is STRICTLY CONFIDENTIAL and will only be seen by staff working on this project.

Medical Research Council, 6 Lilybank Gardens, Glasgow, G12 8RZ Telephone 0141 357 3949

This questionnaire has three sorts of question.

A. The first asks you to indicate the answer that applies to you by ticking a box next to the answer
For example

Is your home built of sandstone?

yes ☑ no ☐

In the example someone has ticked the box next to "yes" showing that their home is built of sandstone.

B. The second sort of question asks you simply to write an answer in the box provided.
For example

How many times have you been shopping in the last month?

7

In the example someone has said that they went shopping 7 times in the last month. If they had not been shopping they would have put 0 in the box.

C. The other sort of question asks you to tell us what you think
For example

What do you like about holidays?

having a rest

doing something different

In the example someone has said that they like holidays because they can have a rest and they can do something different.

There will be examples to help you answer the questions throughout the questionnaire. Please look out for ☞ to tell you where to go next.

About you

Q1. Over the last 12 months would you say your health on the whole has been excellent, good, fair or poor?

Please tick ONE box.

excellent ☐1 good ☐2 fair ☐3 poor ☐4

Q2. Are you registered disabled?

Please tick ONE box.

yes ☐1 no ☐2

Q3. Over the last 12 months, how many times have you consulted a GP or family doctor on your own behalf?

This could be you visiting the surgery or the doctor visiting you at home.

Please WRITE the number of times in the box below.

☐ time(s) in the last 12 months

Q4. Are you...?

Please tick ONE box.

male ☐1 female ☐2

Q5. What is your age?

This information is very important because people of different ages have different needs for housing and transport and also have different health problems.

Please WRITE your age in the box below.

☐ years

Q6. Can we just check, do you still stay at the address this questionnaire was sent to?

Please tick 'yes' or 'no' and if you do NOT stay at the same address please write in your new postcode as in the example.

yes ☐1 no ☐2

e.g. | G 1 2 | 8 R Z |

Q7. Do you have a driving licence?

Please tick ONE box.

yes - full ☐1 yes - provisional ☐2 no ☐3

Q8. On the whole how happy are you with your life in general? Look at the faces and TICK the box under the face which shows best how you feel.

☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

Your health and wellbeing

Q9. a) Do you have any long-standing illness, disability or infirmity?

by long-standing we mean anything that has troubled you over a period of time or that is likely to affect you over a period of time.

Please tick ONE box.

yes ☐ 1 no ☐ 2

☞ If **NO** go to **Q10.** at the bottom of the page

☞ If **YES** go to part **b** below

b) What is the matter with you? Please WRITE in all conditions you have.

c) Do any of these illnesses or disabilities limit your activities in any way?

Please tick ONE box.

yes ☐ 1 no ☐ 2

Common Symptoms

Q10. Which of the following symptoms have you suffered from during the last month?

Please tick ALL that you have suffered from within the last month.

Within the last month have you suffered from problems with...?

headaches	☐ 1	kidney or bladder trouble	☐ 11
hay fever	☐ 2	painful joints	☐ 12
difficulty sleeping	☐ 3	difficulty concentrating	☐ 13
constipation	☐ 4	palpitations or breathlessness	☐ 14
trouble with eyes	☐ 5	trouble with ears	☐ 15
a bad back	☐ 6	worrying over every little thing	☐ 16
nerves	☐ 7	indigestion/stomach trouble	☐ 17
colds and flu	☐ 8	sinus trouble or catarrh	☐ 18
trouble with feet	☐ 9	persistent cough	☐ 19
always feeling tired	☐ 10	faints or dizziness	☐ 20

Your feelings over the last 7 days

Q11. Here is a set of questions about the way you have been feeling in general over the last 7 days.

The choice of answers is often different for each question, so please read each one carefully and circle the answer which shows how you have been feeling.

For example...

I feel tired and flat	*most of the time*	*a lot of the time*	*only occasionally*	*never*

The person answering has been feeling tired and flat only occasionally over the last week, so he or she has circled 'only occasionally.'

NOW ANSWER THE QUESTIONS BELOW. PLEASE DON'T MISS ANY OUT.

I feel tense or 'wound up'	most of the time	a lot of the time	only occasionally	never
I still enjoy the things I used to	just as much as ever	not quite as much	only a little	hardly at all
I get a sort of frightened feeling as if something awful is about to happen	a lot, and quite badly	sometimes, but not too badly	a little, but it doesn't worry me	never
I can laugh and see the funny side of things	as much as I always could	not quite as much as I used to	a lot less than I used to	never
Worrying thoughts go through my mind	a great deal of the time	a lot of the time	from time to time, but not often	only occasionally
I feel cheerful	never	not often	sometimes	most of the time
I can sit at ease and feel relaxed	nearly all the time	usually	not often	never
I feel as if I am slowed down	nearly all the time	very often	sometimes	never
I get a sort of frightened feeling like 'butterflies' in the stomach	never	occasionally	quite often	very often
I have lost interest in my appearance	completely	I don't care nearly as much as I should	I don't take quite as much care as I used to	I take as much care as ever
I feel restless as if I have to be on the move	very much indeed	quite a lot	not very much	never
I look forward with enjoyment to things	as much as I ever did	less than I used to	a lot less than I used to	never
I get sudden feelings of panic	very often	quite often	only occasionally	never
I can enjoy a book or TV program	often	sometimes	not often	hardly at all

Your feelings about yourself

Q12. Your feelings about yourself are an important part of your health and wellbeing. Please answer the questions as in the example below.

For example

	strongly agree	*agree*	*disagree*	*strongly disagree*
I am a healthy person	☐	☐	☑	☐

In the example someone has ticked the third box saying that they disagree that they are a healthy person.

For EACH of the following statements please indicate how much you agree or disagree with them by ticking the box that applies.

	strongly agree	agree	disagree	strongly disagree
When I make up my mind to do something I expect to be successful	☐ 1	☐ 2	☐ 3	☐ 4
On the whole I am satisfied about myself	☐ 1	☐ 2	☐ 3	☐ 4
I wish I could have more respect for myself	☐ 1	☐ 2	☐ 3	☐ 4
I feel I am a person of worth, at least equal to others	☐ 1	☐ 2	☐ 3	☐ 4
I take a positive attitude towards myself	☐ 1	☐ 2	☐ 3	☐ 4
Nowadays there seem to be a lot of problems that I can't solve however hard I try	☐ 1	☐ 2	☐ 3	☐ 4
I am able to do things as well as most people	☐ 1	☐ 2	☐ 3	☐ 4
I often feel I have little control over the things that happen to me	☐ 1	☐ 2	☐ 3	☐ 4
All in all I am inclined to think I am a failure	☐ 1	☐ 2	☐ 3	☐ 4
At times I think I am no good at all	☐ 1	☐ 2	☐ 3	☐ 4
I feel I have a number of good qualities	☐ 1	☐ 2	☐ 3	☐ 4
I certainly feel useless at times	☐ 1	☐ 2	☐ 3	☐ 4
I feel I do not have much to be proud of	☐ 1	☐ 2	☐ 3	☐ 4
I can achieve all my goals if I put my mind to it	☐ 1	☐ 2	☐ 3	☐ 4

Your home

Q13. Please tick the box under the face which shows how best you feel about your house or flat.

☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

Q14. Below are some opinions that people might have about their home. How strongly do you agree or disagree with each one?

Please tick ONE box for EACH statement.

	strongly agree	agree	neither agree nor disagree	disagree	disagree strongly
I feel I have privacy in my home	☐1	☐2	☐3	☐4	☐5
I can get away from it all in my home	☐1	☐2	☐3	☐4	☐5
I can do what I want, when I want with my home	☐1	☐2	☐3	☐4	☐5
Most people would like a home like mine	☐1	☐2	☐3	☐4	☐5
I feel in control of my home	☐1	☐2	☐3	☐4	☐5
I feel safe in my home	☐1	☐2	☐3	☐4	☐5
My home makes me feel I'm doing well in life	☐1	☐2	☐3	☐4	☐5
I worry about losing my home	☐1	☐2	☐3	☐4	☐5
My home life has a sense of routine	☐1	☐2	☐3	☐4	☐5

Some of the next questions talk about your **household**.

A household is one person or a group of people who have the accomodation as their *only* or *main* residence

AND (for a group)

either share at least one meal a day

or share the living accomodation, that is a living room or sitting room.

Q15. Would you describe your home as a...?

Please tick ONE box.

detached house	☐ 1	flat in a traditional sandstone tenement	☐ 5
semi detached house	☐ 2	flat in a low rise block (4 floors or less)	☐ 6
terraced house	☐ 3	flat in a high rise block (5 or more floors)	☐ 7
flat 'four in a block'	☐ 4	something else *(please tick box and describe below)*	☐ 8

_____

Q16. On what floor of your building is your main living accommodation?

Please tick ONE box.

ground floor / street level	☐ 1	basement or semi basement	☐ 3
1st floor to fourth floor	☐ 2	fifth floor or above	☐ 4

If fifth floor or above please write floor level in here e.g.10th ☐

Q17. What is the basis on which this accomodation is occupied?

We would like to know about your household so if you stay in a friend's home or your parents' home, for example, please tick how they occupy the accomodation.

Please tick ONE box that applies to your household.

rented from the Council	☐ 1	being bought with a mortgage	☐ 5
rented from Scottish Homes	☐ 2	owned outright	☐ 6
rented from a housing association, cooperative or charitable trust	☐ 3	partly bought and partly rented (i.e. shared ownership)	☐ 7
rented from a private landlord or letting agency	☐ 4	something else *(please tick box and describe below)*	☐ 8

_____

☞ If your home is **RENTED**, please go to **Q20.** on page 7

☞ If your home is **OWNED** (or being bought), please go to **Q18.** below

Q18. Is this home bought from the Council or a housing association?

Please tick ONE box.

yes ☐ 1 no ☐ 2

Q19. What was the original amount and type of mortgage for your home?

Please WRITE in amount and tick ONE box.

£ _____ endowment mortgage ☐ 1 repayment mortgage ☐ 2 never had a mortgage for this home ☐ 3

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Q20. Please count the number of rooms your household has for its own use.

Do not count:
small kitchens under 2 metres (6 feet 6 inches) wide
bathrooms
toilets

Do count:
larger kitchens
living rooms
bedrooms
all other rooms in your accommodation

Please WRITE the number in the box below.

The total number of rooms is ☐

Q21. When did you move to your home?

Please WRITE the year in the box below.

☐

Q22. How many hours do you usually spend at home on a typical day (including time spent asleep)?

We would like to know about a typical weekday (Monday to Friday) and a typical day at the weekend (Saturday or Sunday).

Please WRITE the number of hours in the boxes.

typical weekday ☐ hours per day (out of 24 hours)

typical weekend day ☐ hours per day (out of 24 hours)

Q23. What would you say your home would be worth if it was sold?

Even if you rent your home please try to give an estimate.

Please WRITE in the box below.

£ ☐

Q24. Compared with other houses and flats in your street is your home...?

Please tick ONE box.

worth more ☐1 worth about the same amount ☐2 worth less ☐3

Q25. Do you have a garden or yard?

Please tick ONE box.

no ☐1 yes, communal or shared with at least one other household ☐2 yes, not shared with any other household ☐3

Q26. Does your home have any of the following items?

Please tick ALL the items that there are in your home.

telephone ☐1 satellite or cable TV ☐4 double glazing ☐7

central heating ☐2 deep freezer/ fridge freezer ☐5 washing machine ☐8

smoke alarm ☐3 burglar alarm ☐6 security lighting ☐9

Q27. The next question is about problems that people can have with their homes. To what extent, in your opinion, is each of the following a problem in your home?

Please tick ONE box for EACH problem.

	a serious problem	a minor problem	not a problem
damp or condensation	☐ 1	☐ 2	☐ 3
keeping your home warm in winter	☐ 1	☐ 2	☐ 3
too little space (feeling crowded)	☐ 1	☐ 2	☐ 3
too much space (too large)	☐ 1	☐ 2	☐ 3
noise	☐ 1	☐ 2	☐ 3
poor state of repair	☐ 1	☐ 2	☐ 3

Q28. Is it ever difficult for your household to meet the cost of...?

Please tick ONE box on EACH line.

	very often	quite often	only occasionally	never	not applicable
rent or mortgage	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
repairs, maintenance and factor charges for your home	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
gas, electricity and other fuel bills	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
telephone bill	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
bills for council tax, insurance etc. that come up from time to time	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

Your Neighbourhood

Q29. Please TICK the box under the face which shows best how you feel about living in your neighbourhood?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7

Q30. Do you feel part of your local community?

Please tick ONE box.

very much ☐ 1 a little ☐ 2 not at all ☐ 3

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Q31. How well placed do you think your home is for...?

Please tick ONE box for EACH statement.

	very well placed	fairly well placed	not very well placed	not at all well placed
getting to work	☐ 1	☐ 2	☐ 3	☐ 4
general food stores	☐ 1	☐ 2	☐ 3	☐ 4
your doctor's surgery	☐ 1	☐ 2	☐ 3	☐ 4
the nearest hospital with a casualty department	☐ 1	☐ 2	☐ 3	☐ 4
primary schools	☐ 1	☐ 2	☐ 3	☐ 4
secondary schools	☐ 1	☐ 2	☐ 3	☐ 4
safe play areas	☐ 1	☐ 2	☐ 3	☐ 4
public transport/ buses and trains	☐ 1	☐ 2	☐ 3	☐ 4
libraries (including mobile libraries)	☐ 1	☐ 2	☐ 3	☐ 4
chemist or pharmacy	☐ 1	☐ 2	☐ 3	☐ 4

Q32. Around where you live would you say that any of the following are a serious problem, a minor problem or not a problem?

Please tick ONE box for EACH problem.

	a serious problem	a minor problem	not a problem
vandalism	☐ 1	☐ 2	☐ 3
litter and rubbish	☐ 1	☐ 2	☐ 3
smells and fumes	☐ 1	☐ 2	☐ 3
assaults or muggings	☐ 1	☐ 2	☐ 3
burglaries	☐ 1	☐ 2	☐ 3
disturbance by children or youngsters	☐ 1	☐ 2	☐ 3
speeding traffic	☐ 1	☐ 2	☐ 3
discarded needles or syringes	☐ 1	☐ 2	☐ 3
uneven or dangerous pavements	☐ 1	☐ 2	☐ 3
nuisance from dogs	☐ 1	☐ 2	☐ 3
reputation of neighbourhood	☐ 1	☐ 2	☐ 3
poor public transport	☐ 1	☐ 2	☐ 3
noise	☐ 1	☐ 2	☐ 3
the people round here	☐ 1	☐ 2	☐ 3

Q33. How many people are there in your neighbourhood with whom you exchange small favours?

An example would be leaving a key to let a repair man in.

Please WRITE the number of people in the boxes.

I exchange favours with ☐ people who live in my neighbourhood.

Q34. When did you move to your neighbourhood?

Please WRITE the year in the box below.

☐

Q35. We are interested in your views about home ownership, even if you rent your home. What do you think are the three BEST things about owning a home?

Please answer this question even if you rent your home.

1. _____
2. _____
3. _____

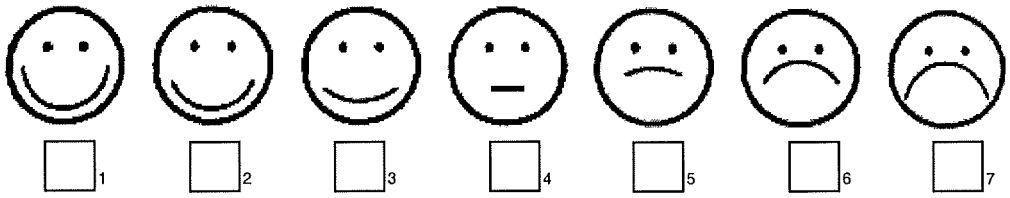
Q36. What do you think are the three WORST things about owning a home?

Please answer this question even if you rent your home.

1. _____
2. _____
3. _____

Your transport

Q37. Please TICK the box under the face which shows best how you feel about the means of transport that you normally use to get around.



☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

Q38. Is it ever difficult for your household to meet the cost of...?

Please tick ONE box on EACH line.

	very often	quite often	only occasionally	never	not applicable
public transport fares	☐1	☐2	☐3	☐4	☐5
car loans	☐1	☐2	☐3	☐4	☐5
car repairs and maintenance	☐1	☐2	☐3	☐4	☐5
car tax, MOT, and car insurance	☐1	☐2	☐3	☐4	☐5
car running costs e.g. petrol	☐1	☐2	☐3	☐4	☐5

Q39. How many cars or vans are owned, or available for use, by one or more members of your household?

Include company cars/vans if private use allowed and exclude vans used solely for carrying goods.

Please tick ONE box.

none ☐0 one ☐1 two ☐2 three ☐3 four or more ☐4

If four or more *please WRITE number in here* ☐

☞ If there are **NONE** please go to **Q42.** on page 14

☞ If there are **ONE OR MORE** please go to **Q40.** below

Q40. Can we just check, are ALL of these cars and vans owned by or leased to people who live in your household, rather than owned by or leased to someone living somewhere else?

Please tick ONE box.

yes ☐1 no ☐2

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Q41. Please tell us about the cars and vans that are owned or leased to your household.

Please start with the car or van you use most. So if you have one car, please just fill in details for car or van 1.

Please WRITE in the make and the model, the number plate registration letter that indicates the age of the car (or original numberplate if you have a personalised numberplate) and also the amount you think it is worth as in the example shown.

	a) make	b) model	c) numberplate registration letter	d) amount worth
Example	Ford	Fiesta	M	£ 6000
Car or van 1				£
Car or van 2				£
Car or van 3				£
Car or van 4				£

e) Was the car or van acquired...?

Please tick ONE box for EACH car or van in your household. Please keep the cars or vans in the same order - so Car or van 1 below is the same as car or van 1 above.

	new	secondhand	as a company car
Car or van 1	☐ 1	☐ 2	☐ 3
Car or van 2	☐ 1	☐ 2	☐ 3
Car or van 3	☐ 1	☐ 2	☐ 3
Car or van 4	☐ 1	☐ 2	☐ 3

f) Compared with other cars/vans in your neighbourhood is it worth more, about the same or less?

Please tick ONE box for EACH car or van in your household.

	worth more	worth about the same	worth less
Car or van 1	☐ 1	☐ 2	☐ 3
Car or van 2	☐ 1	☐ 2	☐ 3
Car or van 3	☐ 1	☐ 2	☐ 3
Car or van 4	☐ 1	☐ 2	☐ 3

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g) Was the car bought with a loan and if yes how much was it?

Please tick ONE box for EACH car or van in your household and then write in if applicable.

	yes	no	how much was the car loan?
Car/van 1	☐ 1	☐ 2	£
Car/van 2	☐ 1	☐ 2	£
Car/van 3	☐ 1	☐ 2	£
Car/van 4	☐ 1	☐ 2	£

h) Do you drive this car?

Please tick ONE box for EACH car or van in your household.

	yes	no
Car/van 1	☐ 1	☐ 2
Car/van 2	☐ 1	☐ 2
Car/van 3	☐ 1	☐ 2
Car/van 4	☐ 1	☐ 2

i) Who owns it (whose name is on the offical documents)?

Please tick ONE box for EACH car or van in your household.

	yourself	spouse/partner	mother	father	son	daughter	other:	*please WRITE in*
Car/van 1	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	
Car/van 2	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	
Car/van 3	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	
Car/van 4	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	

j) Who drives it most?

Please tick ONE box for EACH car or van in your household.

	yourself	spouse/partner	mother	father	son	daughter	other:	*please WRITE in*
Car/van 1	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	
Car/van 2	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	
Car/van 3	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	
Car/van 4	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	

Some of the next questions talk about **public transport**. By public transport we mean buses, coaches, trains and underground trains.

Q42. How do you usually travel to the following?

Please tick ALL that you usually use for EACH destination.

	I don't go	car or van	public transport	taxi	walk	other:	*please WRITE in*
health appointments	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	_____
supermarket	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	_____
sports facilities	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	_____
family/friends	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	_____
days out	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	_____
evenings out	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	_____
work/college	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	_____
taking children to school	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	_____

Q43. How easy is it for you to travel to the following using your usual form of transport?

Please tick ONE box for EACH destination.

	I don't go	very easy	quite easy	quite difficult	very difficult
health appointments	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
supermarket	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
sports facilities	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Family/friends	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
days out	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
evenings out	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
work/college	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
taking children to school	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

Q44. How often is there a car or van available when you need to drive it or have a lift?

Please tick ONE box.

always ☐ 1 most of the time ☐ 2 some of the time ☐ 3 occasionally ☐ 4 never ☐ 5

☞ If you **NEVER** travel by car or van please go to **Q48.**on page 16

☞ If you **EVER** travel by cars and vans please go to **Q45.** below

Q45. How long would you spend in a car or van on a typical day?

Please don't include time spent as part of your paid work.

If on a typical day you spend no time please write 0.

Please WRITE the number of hours and minutes you would spend out of 24 hours in the boxes.

typical weekday		hours		mins
typical weekend day		hours		mins

Q46. When you travel by car are you USUALLY...?

Please tick ONE box.

a driver ☐ 1 a passenger ☐ 2 about half and half ☐ 3

Q47. The next question looks at feelings people might have about travelling by car or van. How much do you agree or disagree with each statement?

Please answer all the questions if you ever, even if only occasionally, travel by car or van.

Please tick ONE box for EACH statement.

	strongly agree	agree	neither agree nor disagree	disagree	disagree strongly
I feel I have privacy when I'm in a car or van	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
I feel I can get away from stresses as I travel by car or van	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
I can travel where I want, when I want by car or van	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Most people would like a car or van like the one that I usually use	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
I feel in control when I travel by car or van	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
I feel safe when I travel by car or van	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
When I travel by car or van it makes me feel I'm doing well in life	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
I worry about the car or van I use having to be sold	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Travelling by car or van fits in well with the routine of my daily life	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

Q48. Do you ever travel by public transport?

That is buses, coaches, trains and underground trains.

Please tick ONE box.

very often ☐1 quite often ☐2 sometimes ☐3 occasionally ☐4 never ☐5

☞ If you **NEVER** travel by public transport please go to **Q51.**on page 17

☞ If you **EVER** travel by public transport please go to **Q49.** below

Q49. How long would you spend on public transport on a typical day?

Please don't include time spent as part of your paid work.

If on a typical day you spend no time please write 0.

Please WRITE the number of hours and minutes you would spend out of 24 hours in the boxes.

typical weekday		hours		mins
typical weekend day		hours		mins

Q50. This question is about general feelings about public transport. How much do you agree or disagree with each statement?

Please answer all the questions if you ever, even if only occasionally, travel by public transport.

Please tick ONE box for EACH statement.

	strongly agree	agree	neither agree nor disagree	disagree	strongly disagree
I feel I have privacy when I travel by public transport	☐1	☐2	☐3	☐4	☐5
I feel I can get away from stresses when I travel by public transport	☐1	☐2	☐3	☐4	☐5
I can travel where I want, when I want by public transport	☐1	☐2	☐3	☐4	☐5
Most people would like to travel by the public transport that I use	☐1	☐2	☐3	☐4	☐5
I feel in control when I use public transport	☐1	☐2	☐3	☐4	☐5
I feel safe when I travel by public transport	☐1	☐2	☐3	☐4	☐5
When I travel by public transport it makes me feel that I'm doing well in life	☐1	☐2	☐3	☐4	☐5
I worry about bus/train services being changed or dropped	☐1	☐2	☐3	☐4	☐5
Public transport times fit in well with the routine of my daily life	☐1	☐2	☐3	☐4	☐5

Q51. What do you think are the three BEST things about having a car?

Please answer this question even if you never travel by car.

1. _____
2. _____
3. _____

Q52. What do you think are the three WORST things about having a car?

Please answer this question even if you never travel by car.

1. _____
2. _____
3. _____

Your Household

We would like to find out about the people who stay with you because different households have different needs for transport and housing.

Q53. Whose names are on the rent agreement (for renters) or on the mortgage or deeds (for owners)?

Please tick ALL that apply and write in the relationship of anybody else to you in the box (e.g. mother in law, stepson, friend, flatmate, partner's sister). If there is more than one please mention all of them.

yourself	☐ 1	mother	☐ 3	daughter	☐ 5	someone else *please tick and WRITE in relationship(s)*	☐ 7
spouse/ partner	☐ 2	father	☐ 4	son	☐ 6		

Q54. Do you live alone?

Please tick ONE box.

yes ☐ 1 no ☐ 2

☞ If **YES** you live alone please go to **Q56** on page 19

☞ If **NO** you stay with other people please go to **Q55** below

Q55. Please tell us about everybody else in your household (that is anyone who has your home as their main or only home and either shares one meal a day with you or shares the living accomodation with you).

This information is completely confidential.

a) In the first column WRITE their relationship to you (e.g. sister or lodger). We do NOT need to know their name,

b) in the second column tick the box that indicates whether they are male or female,

c) in the third WRITE their age in the box and

d) tick the fourth column if they are registered disabled.

a) relationship to you	b) male ☐ 1	female ☐ 2	c) age	d) registered disabled ☐
Person 1				
Person 2				
Person 3				
Person 4				
Person 5				
Person 6				
Person 7				
Person 8				
Person 9				
Person 10				

Work

Whether people work is often an important aspect of people's lives and may affect their transport and housing, so we would like to ask you about your situation. The information will only be seen by researchers working on the project.

Q56. Which of these comes closest to how you would describe yourself at present?

Please tick ONE box.

doing paid work full time	☐ 1	disabled, invalid or permanently sick	☐ 6
doing paid work part time	☐ 2	caring for home and family or dependants	☐ 7
on a government training scheme	☐ 3	full time student	☐ 8
retired	☐ 4	something else *(please tick and describe below)*	☐ 9
unemployed	☐ 5		

Q57. If you are not currently in paid work have you ever been in paid work?

Please tick ONE box.

yes ☐ 1 no ☐ 2

☞ If you have **never done paid work** please go to **Q65** on page 20

☞ If you have **ever done paid work** please go to **Q58** below

Q58. Please WRITE the title of your present paid job (or if you are not currently working you most recent job), describe what you actually do (did) and what sort of employer you work or worked for

Job title (e.g. assistant chef)

Job description (e.g. make puddings, supervise dish washing)

Type of employer (e.g. school)

Q59. Which of these best describes your current work (or most recent work if not currently working)?

Please tick ONE box.

self employed with paid employees	☐ 1	manager	☐ 3	employee	☐ 5
self employed with no paid employees	☐ 2	foreman/supervisor	☐ 4		

Q60. What size organisation do or did you work in?

Please tick ONE box.

a large organisation (25 or more employees)	☐ 1	a small organisation (less than 25 employees)	☐ 2

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Q61. How far away is or was your work from your home?

Please WRITE the number of miles in the box below.

☐ mile(s)

Q62. How long does or did it take you to get to work?

Please WRITE the number of hours and minutes in the boxes below.

☐ hours ☐ mins

Q63. We are interested to know whether people who work in different places have different problems getting to work so we would like to know the post code of your workplace.

If you do not know the whole postcode please just write in the parts that you do know.

Please WRITE the postcode in the boxes below as in the example postcode, ML1 2AB.

e.g.	ML1	2AB

Q64. How much time do or did you spend travelling as part of your job on a typical day?

Please WRITE the number of hours and minutes out of 24 hours in the boxes below.

☐ hours ☐ mins

Q65. Which of these comes closest to how you would describe your spouse or partner's situation at present (if applicable)?

Please tick ONE box.

doing paid work full time	☐ 1	unemployed	☐ 6
doing paid work part time	☐ 2	disabled, invalid or permanently sick	☐ 7
on a government training scheme	☐ 3	caring for home and family or dependants	☐ 8
retired	☐ 4	something else *(please tick and describe below)*	☐ 9
full time student	☐ 5		

_____

Q66. Do you have a spouse or partner who has ever been in paid work?

Please tick ONE box.

yes ☐ 1 no ☐ 2

☞ If **NO** please go to **Q70** on page 22

☞ If **YES** please go to **Q67** on page 21

Q67. Please WRITE the title of your spouse or partner's present paid work (or most recent paid job if they are not currently working) describe what they actually do (did) and the type of employer they work or used to work for.

Job title (e.g. cleaner)

Job description (e.g. clean factory)

Type of employer(e.g.chemical manufacturer)

Q68. Which of these best describes the current work or most recent work of your spouse or partner?

Please tick ONE box.

self employed with paid employees ☐ 1

self employed with no paid employees ☐ 2

manager ☐ 3

foreman/supervisor ☐ 4

employee ☐ 5

Q69. What size organisation does or did your spouse or partner work for?

Please tick ONE box.

a large organisation (25 or more employees) ☐ 1

a small organisation (less than 25 employees) ☐ 2

Money matters

We ask these questions because they are very important for our study but we would like to assure you that this information will be kept completely confidential as with the rest of the questionnaire.

Q70. How much are the mortgage or rent payments for your home per month?

Please don't include Council Tax payments.

Please do include amounts paid by the government as benefits.

Please WRITE the amount in the box.

£ ☐ per month

Q71. What is the total income of everyone in your household (including yourself) altogether per month?

Please include benefits.

Please tell us about take home pay.

Please WRITE the amount in the box.

£ ☐ per month

Q72. What proportion of your household income (including your own) would you say comes from benefits?

Please tick ONE box.

none ☐1 very little ☐2 about a quarter ☐3 about half ☐4 about three quarters ☐5 all ☐6

Q73. Some people have savings and investments (such as savings accounts or PEPS) they can fall back on while others do not. How much have your household (including yourself) saved or invested?

Please tick ONE box.

none ☐1 £500 or less ☐3 £501 to £3000 ☐5 £3001 to £8000 ☐7

£8001 to £10000 ☐2 £10 001 to £16000 ☐4 More than £16000 ☐6

Q74. Is it ever difficult for your household to meet the cost of...?

Please tick ONE box on EACH line

	very often	quite often	only occasionally	never	not applicable
food and necessities	☐1	☐2	☐3	☐4	☐5
treats and luxuries like having a night out or presents for the family	☐1	☐2	☐3	☐4	☐5

Lifestyles

In this final section we would like to find out about aspects of people's lifestyles which may affect their health.

Q75. a) Do you ever drink alcoholic drinks now, even if it is just occasionally, or have you ever drunk alcohol in the past?

Please tick ONE box.

drink now ☐ 1 in past only ☐ 2 never ☐ 3

☞ If you do **NOT drink now** please go to **Q76** below

☞ If you **drink now**, (even if just occasionally) go to part **b** below

b) Thinking of last week how much of each of the following did you drink?

If it helps, think back over each day to this time last week and add each day up together.

Please WRITE the total for last week, for EACH type of drink, in the boxes below.

Beer, Lager, Cider		pints
Wine		glasses
Martini, Sherry, Port		glasses
Spirits		measures
Other alcoholic drinks		glasses

Q76. a) Do you smoke now, even if it is just occasionally, or have you ever smoked in the past?

Please TICK ONE box.

smoke now ☐ 1 in past only ☐ 2 never ☐ 3

☞ If you **do not smoke now** please go to **Q77** on page 24

☞ If you **smoke now** please go to part **b** below

b) How many cigarettes (including roll-ups) do you smoke each day?

Please WRITE the number in the box below.

☐ cigarettes per day

Q77. This question asks about your feelings about your life. How much do you agree or disagree with each of the following statements?

Please tick the box that shows how strongly you agree or disagree with EACH statement.

	strongly agree	agree	disagree	strongly disagree
There is really no way I can solve some of the problems I have	☐ 1	☐ 2	☐ 3	☐ 4
Sometimes I feel that I'm pushed around in life	☐ 1	☐ 2	☐ 3	☐ 4
I have little control over the things that happen to me	☐ 1	☐ 2	☐ 3	☐ 4
I can do just about anything I really set my mind to do	☐ 1	☐ 2	☐ 3	☐ 4
I often feel helpless in dealing with the problems of my life	☐ 1	☐ 2	☐ 3	☐ 4
What happens to me in the future mostly depends on me	☐ 1	☐ 2	☐ 3	☐ 4
There is little I can do to change many of the important things in my life	☐ 1	☐ 2	☐ 3	☐ 4

Q78. How many servings of fruit and vegetables do you eat in a typical day?

By serving we mean, for example, an orange or a portion of carrots.

Please include all types of raw or cooked fruits and vegetables.

Please WRITE the number of servings for summer and winter in the boxes below.

in summer ☐ servings of fruit and vegetables per day

in winter ☐ servings of fruit and vegetables per day

Q79. What about exercise? On how many days in an average month (4 weeks) do you do any sport or physical exercise (e.g. dancing or brisk walking) that makes you out of breath and sweat, and that you do for more than 20 minutes at a time?

Please WRITE the number of days a month in the box.

☐ days in an average month

Anything else that you would like to tell us

If you have any other comments that you would like to make, please write it in the box below.

THANK YOU VERY MUCH FOR COMPLETING THIS QUESTIONNAIRE. We could not do this study without your help.

Please could you just look back to check that you haven't missed any questions by mistake or turned two pages at once.

Now please send it back to us in the envelope provided.

Appendix 4 Questionnaire Mailings

Covering letter

Funded by an Economic and Social Research Council Grant jointly held by the MRC and Centre for Housing Research and Urban Studies

UNIVERSITY
of
GLASGOW

6th October 1997

Dear

Our health is affected by our housing and also by the transport we use. However it is not clear why health is influenced by these things. The enclosed questionnaire is part of a study which aims to find out how housing and transport affect well-being. The information from this study will be used to contribute to policies to prevent poor health.

We have randomly selected a small number of people from the electoral register in the west of Scotland to help us answer some questions about health, housing and transport. Your experiences and thoughts are very important to us and so we hope that you will complete the questionnaire and return it to us in the enclosed prepaid envelope. **Everyone who returns a completed questionnaire will be entered into a prize draw. The winner will receive a Marks and Spencers voucher worth £50.**

You may be sure of complete confidentiality. The questionnaire has an identification number so that we may remove your name from the mailing list when your questionnaire is returned. Your name will never be placed on the questionnaire.

We would be very happy to answer any questions you might have. If you would like some more information please contact our Research Assistant, Rosemary Hiscock, at the address below or phone 0141 357 3949.

Thank you very much for all your help and we look forward to receiving your questionnaire.

Yours sincerely

[redacted]

Professor S. J. Macintyre

TRANSPORT HOUSING AND WELLBEING
Medical Research Council, 6 Lilybank Gardens, Glasgow G12 8RZ (0141 3573949)

First reminder (a postcard)

13th October 1997

Last week a questionnaire was sent to you from the University of Glasgow asking for your participation in a very important study about transport, housing and wellbeing.

If you have already completed and returned it to us please accept our sincere thanks. If you've been on holiday or haven't had time to complete it, we'd be very grateful if you could do so as soon as possible. It is very important that we are able to include your opinions in our study.

If by some chance you did not receive the questionnaire, or it has been misplaced, please call Rosemary Hiscock, our Research Assistant, on 0141 357 3949.

Again, thank you.

Yours sincerely,

[redacted]

Professor S. J. Macintyre
Medical Research Council, 6 Lilybank Gardens, Glasgow, G12 8RZ

Second reminder (letter)

Funded by an Economic and Social Research Council Grant jointly held by the MRC and Centre for Housing Research and Urban Studies

UNIVERSITY
of
GLASGOW

29th October 1997

Dear

About three weeks ago I wrote to you seeking some information about your transport, housing and wellbeing. We do not seem to have received a completed questionnaire from you. We appreciate that this may be because you did not receive the questionnaire or you have been particularly busy, or you have already returned it and it has not yet reached us.

If you have already returned the questionnaire, please accept our sincere thanks. If you have not, we would be very grateful if you could complete and return it as soon as possible. Only about one in every 274 people in the West of Scotland is being asked to take part in this study, so it is very important that as many people as possible return the questionnaire.

Everyone who completes and returns a questionnaire will be entered into a prize draw. The winner will receive a Marks and Spencers voucher worth £50.

We are doing this important study because we believe that transport and housing can influence health and that this should be taken into account in the formation of public policies.

In case your questionnaire has been misplaced, I enclose a replacement. If you would like some more information about the study please contact our Research Assistant, Rosemary Hiscock, at the address below or phone 0141 357 3949.

Your co-operation is greatly appreciated.

Yours sincerely

[redacted]

Professor S. J. Macintyre

TRANSPORT HOUSING AND WELLBEING
Medical Research Council, 6 Lilybank Gardens, Glasgow G12 8RZ (0141 3573949)

Third reminder (letter)

Funded by an Economic and Social Research Council Grant jointly held by the MRC and Centre for Housing Research and Urban Studies

UNIVERSITY
of
GLASGOW

24th November 1997

Dear

You are probably absolutely fed up with us sending you letters and questionnaires, but I promise you that this is the very last time we'll be writing to you about this study.

This survey is very important for helping decisions about transport and housing policy. The more replies we receive, the more accurate will be the picture we can build up, so although over 2500 people have already returned the questionnaire, we would like to reach our target of 3000.

I would be very grateful if you could help us reach that goal by completing and returning the questionnaire, but I quite understand if you decide not to do it. If so, please just throw the questionnaire away (you don't need to let us know) and we will keep our promise not to contact you about the questionnaire again.

Everyone who returns a completed questionnaire will be entered into a prize draw which will take place on 18th December. The winner will receive a Marks and Spencers voucher worth £50.00

If there is anything that you would like to talk to us about, please write to or telephone our research assistant, Rosemary Hiscock at the address or phone number below.

Seasons greetings, and thank you for your patience.

Most sincerely

[redacted]

Professor S. J. Macintyre

TRANSPORT HOUSING AND WELLBEING
Medical Research Council, 6 Lilybank Gardens, Glasgow G12 8RZ (0141 3573949)

Appendix 5 Analysis of missing cases

In some of the multivariate analyses about half the cases were excluded. Only data from respondents who specified they were owner occupiers or social renters were analysed. Cases were also missing because respondents were permanently sick or had missing data on one or more variables.

I present here tables to show the effect of the 'lost' respondents. Table A5.1 provides information about how the number in each category changes due to the exclusion of cases, firstly due to being permanently sick (column 2) and secondly due to missing data (column 3). I did not look at exclusion due to tenure because the reason that tenures were excluded was due to small numbers, making modelling difficult. The health variable analysis with the most missing cases was predicting depression where only 1218 cases were available. Thus column 3 presents the worst case scenario.

Excluding the permanently sick made very little difference to the proportion in each *age* and *sex* group. Larger proportions of those with low socio-economic status (low *income*, manual *social class* and social renters) were lost compared to those with higher socio-economic status. Not surprisingly the proportion reporting *LLSI* reduced from a third to a quarter. Overall, excluding the permanently sick did not change the proportions in each category to a great extent.

Excluding those with missing data involved losing more cases than just excluding the permanently sick. This reduction in cases was less uniform across categories. The *age quartile* with the most missing data was 66+. The proportion in this category declined from 26% to only 14%. Females had more missing data than males but the difference was small. Those in the lowest *income quintile*, *social class* IV&V and social renters were most likely to have missing data. Only a fifth of the cases now reported a *LLSI*.

Table A5.1 The effect of exclusions on numbers in various categories in the analysis

	Sample N(%)	Minus permanently sick N(%)	Minus missing data N(%)
Total	2838(100)	2460(100)	1218(100)
Age quartile			
under 38	743(26)	692(28)	414(34)
38-50	676(24)	586(24)	366(30)
51-65	712(25)	538(22)	266(22)
66+	698(25)	637(26)	172(14)
Sex			
female	1650(58)	1451(59)	679(56)
male	1177(42)	1001(41)	539(44)
Income quintile			
≥£16000.00	436(20)	421(22)	331(27)
<£16000.00	433(20)	415(22)	315(26)
<£1041.67	436(20)	400(21)	246(20)
<£726.80	425(20)	343(18)	181(15)
<£491.80	443(20)	347(18)	145(12)
Social class			
i&ii	704(30)	674(32)	463(38)
iiin	619(26)	585(28)	339(28)
iiim	480(20)	408(19)	208(17)
iv&v	545(23)	458(22)	208(17)
Housing tenure			
owner occupier	1693(63)	1568(67)	914(75)
social renter	995(37)	768(32)	304(25)
LLSI			
no	1772(67)	1703(74)	947(79)
yes	869(33)	606(26)	251(21)

To find which categories were more likely to have missing cases, I carried out a logistic regression analysis (table A5.2). The dependent variable for the analysis was 'missing in the multivariate analysis of depression' (versus valid). The independent variables were the variables in table 1. I did not include the permanently sick in this analysis.

There were 1580 cases in the analysis so this regression only applies to cases that had no missing data on the variables included in the model. I reran the model without *income quintile* (the sample size increased to 1801 cases) and none of the non significant variables in table 1 became significant or even approached significance. Income had the most missing data (20%) of any variable analysed.

Income information was not provided by 19% of owners and 21% of social renters. Thus missing income data was fairly evenly spread across tenures. Slightly fewer respondents in social class I & II (11%) failed to complete this question. Slightly more older people (36% age over 65) missed the income question.

Table A5.2 Logistic regression analysis predicting 'missing in the multivariate analysis of depression'

Variable	Wald	Exp(B)	Sig
Tenure			
owner		1.00	
social renter	2.20	1.25	.1381
Sex			
male		1.00	
female	1.00	1.15	.3162
Age quartile	22.58		.0000
under 38		1.00	
38-50	.91	1.18	.3413
51-65	8.66	1.66	.0033
66+	18.85	2.26	.0000
Income quintile	11.04		.0261
≥£16000.00		1.00	
<£16000.00	.24	.90	.6247
<£1041.67	1.46	1.29	.2262
<£726.80	4.05	1.59	.0443
<£491.80	5.06	1.75	.0245
Social class	14.00		.0029
i&ii		1.00	
iiin	.53	1.14	.4668
iiim	4.48	1.51	.0342
iv&v	11.50	1.91	.0007
LLSI			
no		1.00	
yes	.32	1.08	.5746
Constant	118.92		.0000

'Missing in the multivariate analysis of depression' was predicted by being aged over 50 and particularly over 65; manual *social class*, especially partly skilled or unskilled; or having an *income* below £726.80 a month and in particular an income below £491.80. *Tenure*, *sex* and *LLSI* did not independently predict cases being missing. Therefore even though in table 1 there seemed to be large changes in *tenure* and *LLSI*, these were due to their relationship with *age*, *social class* and

income. It is possible that the effects of *social class* and *income* may be to do with education, which was not measured in the survey. In a further model (not shown) I also included *self esteem* which did not approach significance.

I also examined the effect of missing cases on the bivariate relationship between ontological security factors and tenure using ANOVA (table A5.3). I recommend reading chapter 6 to understand this analysis. Excluding the permanently sick slightly weakened the effect sizes. Excluding the cases with missing data increased the effect sizes.

Table A5.3 The effect of missing cases on the bivariate relationship between ontological security factors and tenure

	Sample	Minus permanently sick	Minus missing data
Protection			
owner mean	.10	.11	.09
social renter mean	-.14	-.11	-.20
eta^2	.016	.012	.018
Autonomy			
owner mean	.09	.10	.07
social renter mean	-.12	-.10	-.23
eta^2	.013	.012	.021
Prestige			
owner mean	.16	.17	.15
social renter mean	-.24	-.22	-.38
eta^2	.047	.044	.070

$p<.001$ for all analyses

Why should this be? Respondents with low incomes and classified as manual social class were likely to have missing data. The results in the multivariate analysis in section 6.5, summarised in figure 6.2, suggest that those in manual social classes received more ontological security from their homes than those in non manual social classes; additionally those with low incomes received more prestige from their homes than those with high incomes. Thus the ontological security factor means decrease for social renting because there are fewer respondents with low income and in low social classes in the analysis. This may suggest that the loss of data will exaggerate the effect of ontological security from the home. For this reason I took the strategy, in the multivariate analysis, of including as many cases as possible (see section 6.5 and chapter 7).

To conclude, excluding the permanently sick appeared to make little difference to the groups in the analysis. Nevertheless it is likely that some of the sickest people in the sample were excluded in this way. Statistical requirements, for cases without missing data, necessitated only 40% of the social renters being retained in the analysis while 60% of the owners were retained. Age and socio-economic status explain the discrepancy in the numbers of owners and social renters who were retained. Even so there were still substantial numbers of owners and renters in the analyses. The removal of some of those in low social class, due to missing data, excluded some social renters with higher ontological security scores. This resulted in an increase in effect sizes for the tenure and ontological security relationship. However the change in numbers did not have a substantial effect on significance measured at the $p<.001$ level.